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DECEMBER 14, 1944

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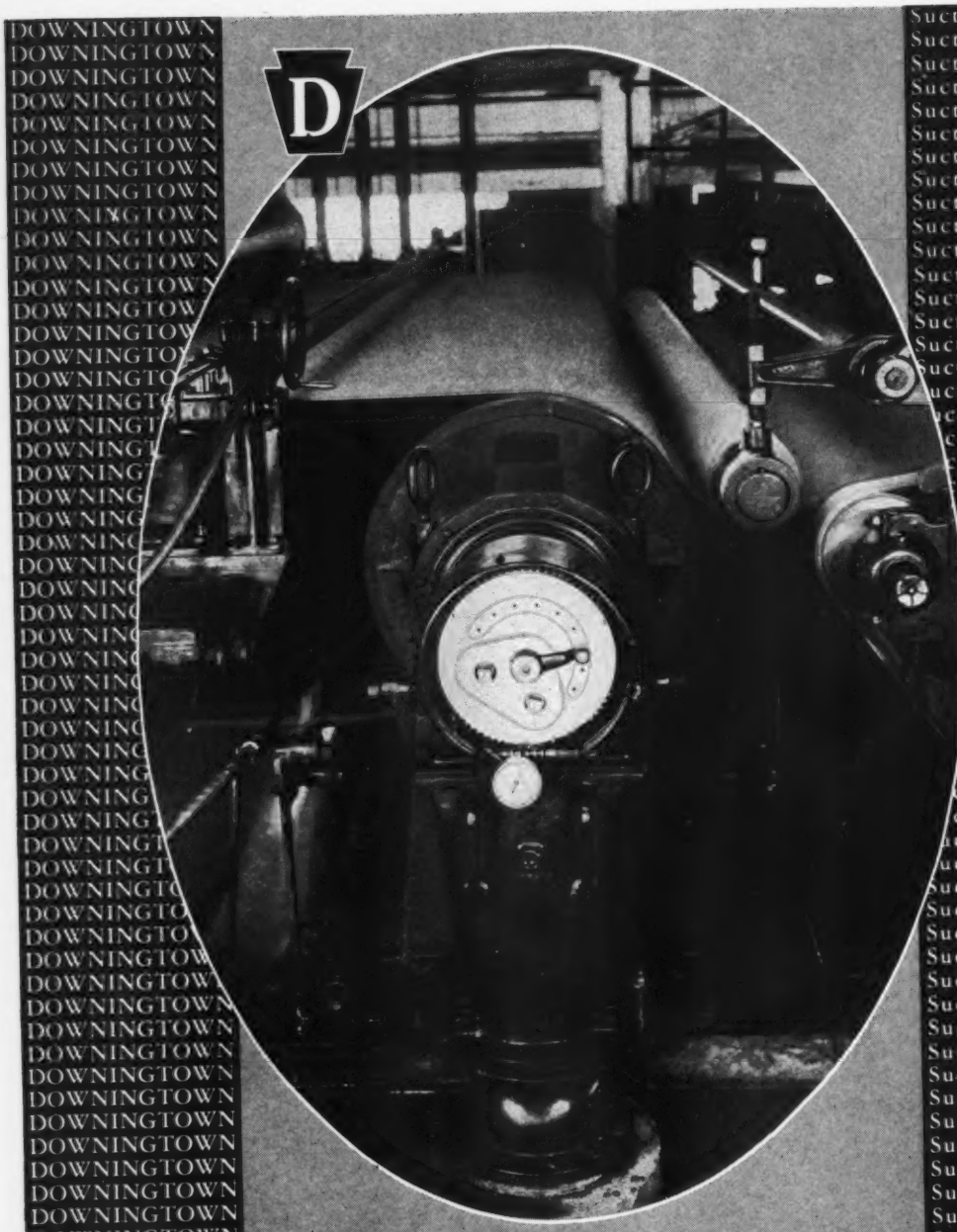

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PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.
Established 1872

Volume 119 Number 24

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CONTENTS

DECEMBER 14, 1944

	PAGE
Consolidated Water Power and Paper Co. Deeds Acreage for Park	11
Court Upholds Mill's Protest	11
Sulphite Committee Meets December 15	11
Cola Parker Appointed by N.A.M.	11
Labor Board Orders Election	11
Nekoosa-Edwards Makes Promotions	11
C. P. P. A. to Hold Meeting	12
Propose Slash Disposal Plan	12
May Take Over Quebec Pulp Corp.	12
Donate Forestry Scholarships	12
Paper Merchants Meet at Detroit	12
The Use of Melamine Resins in Paper	14
Obituary	16
Paper Production in October	16
JoBo Mills to Start Soon	16
Discusses Paper Stock Preparation	18
Pulp Consumers Give $10,000	18
D. M. Shapleigh Joins P. & I.	18
Western Salesmen Meet	18
E. E. Helm Made General Sales Manager	18
Idaho-Montana Pulp Mills Proposed	18
Financial News	24
Discuss Value of Abitibi Bonus	24
Offer Bowater's Mortgage Bonds	24
Rayonier Elerts Vice Presidents	24
Butterworth Acquires Textile Finishing	26
Warren Completes Defunding Plan	26
Newsprint Inventory Ceilings Unchanged	28
W. P. B. Announces Appointments	28
Patent No. on Special Cone Belt	28
Central Donates to Mess Fund	32
Marathon to Honor Employees	32
Charles Radtke Retires	32
Paper Men Attend N.A.M. Meeting	32
Pfc. Hann Dies in France	32
Ends Restrictions on Wax Papers	32
Paper Sales Higher	33
V-Belt Handbook	33
New Lowther C-Saw	33
Editorial	34
Manpower Utilization	34
Production Ratio Report	35
Michigan Division to Meet	35
Latest Market Review	50
Miscellaneous Market	52
Market Quotations	52
Classified Advertising	52
Technical Section *("TAPPI")*	
B. W. Scribner to Receive TAPPI Medal	37
Discuss Coating Adhesives	37
TAPPI Survey of Water Technology	38
TAPPI Notes	48
Joint Meeting at Kalamazoo	48

PAPER TRADE JOURNAL IS INDEXED IN INDUSTRIAL ARTS INDEX

INDEX TO ADVERTISERS ON PAGE 66

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Vol. 119, No. 24

PAPER TRADE JOURNAL

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December 14. 1944

Consolidated Co. Deeds Acreage For Park

Five Valuable Properties Given To Wisconsin Rapids For Public Use — Court Upholds Mill's Protest — Nekoosa-Edwards Makes Promotions — N.L.B. Orders Election — Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 11, 1944—Five valuable properties along the East side front of the Wisconsin River at Wisconsin Rapids, Wis., have been deeded to the city of Wisconsin Rapids by the Consolidated Water Power and Paper Company and the Ahdawagam Paper Products Company, on condition that the land be used for park purposes.

Theo. W. Brazeau, who represented the companies at a meeting of the common council last Tuesday evening, December 5, said there probably will be "more to come."

George W. Mead, president of the two companies, said in a statement last Wednesday, he envisioned the city as one which "will be famed throughout the nation for its success, its beauty and its hospitality."

"Consolidated Company owes much of its success to the Wisconsin River," he said. "It is offering now to help in some plan that will improve the beauty of the banks of the river in the heart of our city. It has taken an option to purchase the Witter Hotel. If it decides to acquire this property it will deed it immediately to the city with the understanding that the hotel building will be dismantled, the site beautified, and a new hotel constructed as soon after the war as may be possible. . . . The leading businessmen of the East side are cooperating with us splendidly in this undertaking. The mayor and common council have given their lively cooperation and help. . . ."

Mayor William T. Nobles, on behalf of the city, expressed deep gratitude for the gift after the aldermen voted unanimous acceptance. "I am sure the people of Wisconsin Rapids and those of the generations to come will be deeply grateful to the Consolidated and Ahdawagam companies. . . . This will enable us to carry through a long-range program begun on the West side several years ago.

"The value of this gift cannot be measured. The generosity of these concerns will make for a city unrivalled in the country and one in which all can take great civic pride."

Court Upholds Mill's Protest

As the result of an action brought by the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., the United States Emergency Court of Appeals last Thursday directed the Office of Price Administration to revise its price regulations covering book papers at the manufacturers' level within 30 days or have the regulation set aside.

The Consolidated Company entered a protest about 18 months ago, claiming that the OPA order worked an undue hardship on the company and that its products were classified improperly. The company contended that the quality of the product should be the determining factor in the establishment of the price ceilings rather than the method of manufacture and that it was prevented from charging as much for its book paper as competitive firms.

The court ruled the regulation must be adjusted to include papers of equal quality or that it must be set aside. It did not, however, direct that there be any increase in the price of the company's paper.

Sulphite Committee Meets December 15

The Sulphite Manufacturers Committee on Waste Disposal will hold its annual meeting December 15 at the Valley Inn, Neenah, Wis., John Strange, secretary, announced last week. Joseph M. Conway, Green Bay, Wis., president and general manager of Hoberg Paper Mills, Inc., is president of the committee.

Labor Board Orders Election

The National Labor Relations Board, in a directive announced December 10, ordered an election among certain employes of Kimberly-Clark Corporation of Neenah, Wis., to determine their representatives for collective bargaining. The labor organization involved is the Wall Paper Workers Union of the Fox River Valley and the election will be held within the next 30 days. Eight persons are covered in the petition asking the election.

Cola Parker Appointed by N.A.M.

Cola G. Parker, president of Kimberly-Clark Corporation, Neenah, Wis., was chosen as a regional vice-president of the National Association of Manufacturers, at a meeting held last week in New York.

Nekoosa-Edwards Makes Promotions

Nekoosa-Edwards Paper Company, Port Edwards and Nekoosa, Wis., has announced five promotions.

Cecil Parvin, Production engineer the last two and a half years, has been made assistant to C. H. Reese, mill manager.

Frank H. Coldwell, who has been with the company since 1925, is Port Edwards superintendent of power, while J. J. Mlsna, an employe for 41 years, now has the title of Nekoosa superintendent of power. Carl Olson, an employe for 21 years, has been named electric superintendent in charge of electrical equipment at all plants.

(Continued on page 32)

C.P.P.A. To Hold Annual January Meeting

Decision To Call One-Day Convention and Two-Day Meeting of Technical and Woodlands Section Based Upon Important Developments—Propose New Slash Disposal Plan—Other Late Mill News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., December 11, 1944—There has been some speculation here as to whether or not the Canadian Pulp and Paper Association would follow the example of the American Association and forego its annual convention this year. However, it is explained that the Canadian Association's gathering is not really a convention but its annual meeting, which is confined to one day, the opportunity being taken of the presence of the members to precede it by a two-day gathering devoted to the annual meetings of the Technical Section and the Woodlands Section, at both of which important technical papers are read and discussed, with the exchange of experiences and views on methods of procedure. In any case, it is felt that developments in connection with the industry as a whole this year have been so important that it would be well to have the leading men in the industry get together for the discussion of them, especially in view of the fact that the war is drawing to an end and that preparations must be made for the post-war era. Therefore it has been decided to carry on as usual. The annual meeting has been fixed for Friday, January 26, 1945, with the Technical and Woodlands Sections holding their meetings on the two days immediately preceding, namely January 24 and 25.

Propose Slash Disposal Plan

In connection with the intensive campaign now being carried on throughout Canada in the interests of forest conservation, the interesting proposal has been put forward that the Forest Services of the various provincial governments should undertake all slash disposal, with compensation to be paid by the lumber and pulp and paper operators. Although slash disposal is strictly supervised, it is complained that irresponsible burning by farmers and ranchers does far more harm than good and that Forest Services could do a more satisfactory job. Some of the provincial chief foresters have expressed agreement with the suggestions and willingness to enter into experimental range burning, but state that at present labor is not available for such work.

May Take Over Quebec Pulp Corp.

The latest development in connection with the Quebec Pulp and Paper Corporation, whose groundwood pulp mill at Chicoutimi, Que., has long been idle, is that the assets of the company may be taken over by the Quebec Government and disposed of to private interests. Private interests both in Canada and the United States have for some time past been undertaking tentative negotiations with a view to bringing the mill into operation, but political and other factors have complicated the problem of removing the company from bankruptcy, into which it was placed by the Provincial Government, as chief creditor on a claim for close to $2,000,000 for water rentals. Fifty per cent of the common stock is owned by Price Bros. and Co. and 50% by Consolidated Paper Corporation. The former company has timber holdings in the same area as the bankrupt company, and holds that the active development of another pulp and paper project on the Saguenay River would raise difficulties in marking and sorting pulpwood logs. Consolidated Paper Corporation, it is reported, would like to strengthen timber reserves for its Port Alfred mill in the vicinity of Quebec Pulp's timber limits, The Aluminum Company of Canada is also interested in Quebec Pulp company's water sites, especially since the Aluminum Company, due to the slackening of the war demand for its products, has released large quantities of hydro-electric power for which it is now seeking customers. Incidentally, the Aluminum Company has laid off many workers, and the re-opening of the Quebec Pulp and Paper Corporation's mill at Chicoutimi would provide work for a substantial number of these. Definite action by the Provincial Government is looked for at an early date.

Donate Forestry Scholarships

The Quebec Forestry Association has announced that to encourage the study of scientific methods of forest conservation, Price Bros. and Co. have donated four scholarships to the School of Civil Engineering and Surveying of Laval University, Quebec.

Under the conditions, the candidates for one of these scholarships will write in what for them will be the secondary language, that is, French-language students at the school will write in English, and vice versa.

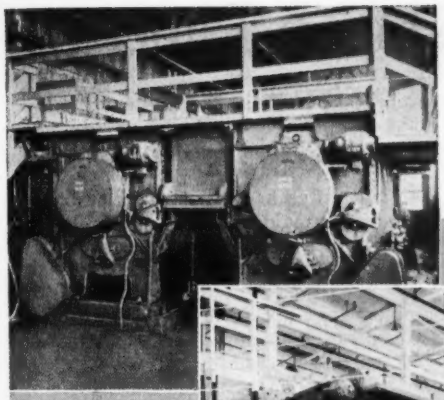
Competitors will be given a choice of a series of subjects, including, first, most effective methods of combatting the insect pest; secondly, chemical, mechanical, and sylvicultural control of the forests, forest operations as regards sylviculture and cutting, and, also, the interpedence of cutting and sylviculture.

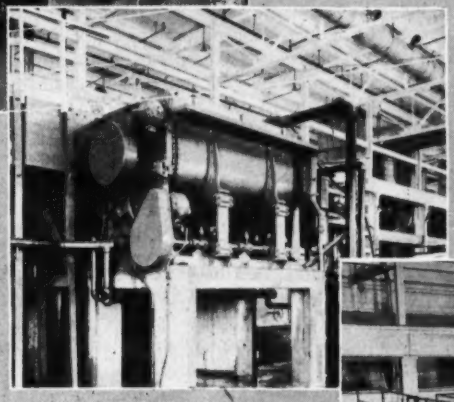
The contest will end by July 1, 1945, and the thesis will be judged by a jury of technicians made up of one English-speaking member, who will represent the Forestry Association, a representative of the industry, and a specialist in each of the subjects mentioned for the competition. The first prize will be $100, the second prize of $50 for each category of subjects, and two prizes for competitors presenting their thesis in English, and two for those presenting them in French.

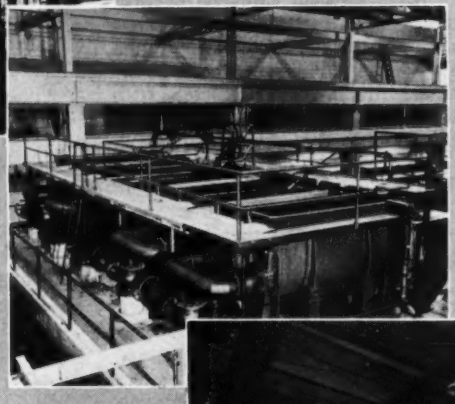
Paper Merchants Meet at Detroit

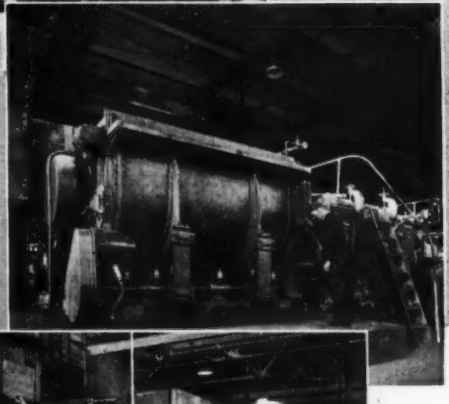
A substantial gathering of the paper merchants of Detroit met at the Harmonie Club in Detroit, Mich., for a luncheon-meeting on December 6, 1944. W. G. Leathers of the National Paper Trade Association, New York, was on hand to lead the discussion with respect to government orders including principally WPB Order M-241. General matters such as the paper supply outlook, timing for the revocation of government orders, renegotiation, and short and long range association affairs were discussed.

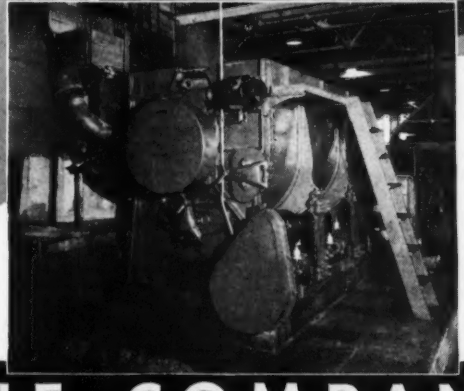
A question-and-answer period covering miscellaneous topics followed the meeting.











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The Use of Melamine Resins in Paper

At a meeting held November 20, members of the Chicago Professional Paper Group were given a most instructive talk by H. B. Freeman of the American Cyanamid and Chemical Corporation. Mr. Freeman spoke on the dry and wet-strength characteristics of paper as affected by Melamine resins. He cleared up many details regarding the use and qualities of this chemical. Mr. Freeman stated that the Melamine process for paper was first introduced about two years ago as a result of a long search for some means of obtaining a high degree of wet strength in the initial paper manufacturing process.

Synthesized From Limestone, Coke and Air

Melamine is a definite chemical synthesized from limestone, coke and air. Electric furnaces are used to combine limestone and coke. The resulting product is then combined with fixed nitrogen from the air. Reactions under pressure with heat catalysts eventually produce Melamine. Some intermediate products are used as principal raw materials for certain sulpha drugs, explosives, and synthetic rubber. To form the product used in paper, Melamine is reacted with formaldehyde, and the resulting resin then dried and powdered. The mills dissolve this powder in weak muriatic acid where microscopic colloidal particles of resin are formed. This material is introduced in the paper stock and the molecular particles attach themselves to the suspended fiber so that when the sheet is formed, the resin particles cure and form water insoluble links between the fiber.

Mr. Freeman wished to clarify the confusion which often exists between the terms sizing and wet-strength. Sizing, usually done with rosin or wax preparations, serves to retard the rate of water or ink pick-up in a sheet of paper in relation to the quantity used and retained. Melamine resin is not a sizing agent and does not slow down the rate of water pick-up, but it does serve to bind the matted fiber even though the sheet become thoroughly water-soaked.

Important Role of Wet Strength Paper

The speaker pointed out the important role that wet strength paper has played in the war; also, the numerous items in which it will be advantageously used when available for civilian consumption. It was pointed out that paper treated with Melamine resin shows increases as high as 25% in Mullen test when dry.

Informative Questions and Answers

The questions which were asked Mr. Freeman were so answered as to cover most of the information which would be desired by those interested in wet-strength paper.

Q. Where is Melamine used? How do you handle the broke?

A. Malamine is incorporated just ahead of the wire. Mills handling their own broke, place it in the broke beater and heat to 180°. They then add 2% to 3% alum which hydrolizes the resin.

Q. What effect does humidity have on a sheet?

A. The Melamine-treated sheet reacts to humidity the same as a sheet containing no resin.

Q. Is wet strength due entirely to Melamine?

A. Melamine does not take the place of rosin size which should be used in conjunction with it.

Q. Does expansion take place in Melamine-treated sheets?

A. Treated sheets change less and expansion is more uniform.

Q. What is the main difference between Melamine formaldehyde and urea formaldehyde?

A. They are both from the same family. Melamine has a higher efficiency per pound of resin and is more stable.

Q. Does Melamine retard ink drying?

A. Formaldehyde released in curing of Melamine resins may slow down or increase drying.

Q. Does Melamine treated paper handle better in die drawing operations?

A. It should.

Q. Is it necessary to adjust the p.H. of paper when treated with Melamine?

A. It is best to correct the p.H. as a hydrochloric acid present will lower it.

Q. What is the permanence of paper which is treated against that which is not?

A. With the same p.H. life of a paper is not changed or it may even be slightly better.

Q. What is the caliper of the stock that is being treated (heavy)?

A. Board sheets now using Melamine run about 16 points.

Q. What is it in Melamine to give higher wet and dry strength?

A. Melamine particles are discreet particles and are attracted specifically to paper fiber.

Q. Can Starch and Melamine be used in the beaters?

A. Starch and Melamine are now being tested.

Q. Does Melamine continue to cure without accelerators?

A. Yes, wet strength does not come up to standard for several weeks after paper is made.

Q. Can a surface application of Melamine be made and used?

A. No, there is too much acid present in surface treatment. If used as a coating the hydrochloric acid of resin will attack the sheet surface. Ammonium sulphate may be used as a catalyst to accelerate curing.

Q. What is the optimum stack temperature for Melamine treated paper?

A. The best temperature for rosin sizing is the best for Melamine. The study is now going on.

Q. What is the per cent of retention of Melamine and what effect does it have on the felts?

A. 70% to 80% is normally retained when used in board manufacture. Quantities as high as 95% have been reported on rag machines. Malemine is attracted to wool and will affect them if too much is picked up. However, careful operation can eliminate this condition.

Q. What is the optimum p.H. for running Melamine resin?

A. A p.H. of 4.7 to p.H. 5.2.

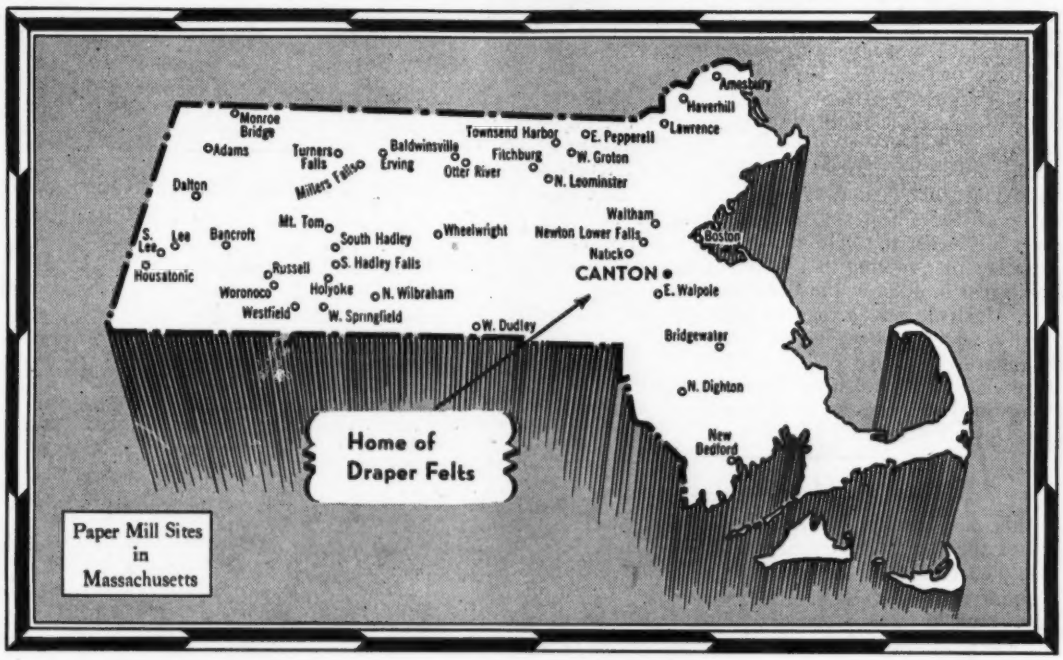
Q. One of the gentlemen present stated that his experience showed that they retained only 60% to 70% of the Melamine and not 70% to 80% as claimed.

A. Mr. Freeman stated that the retention figure would vary depending on how long the Melamine dispersion was aged and suggested better retention with older material.

Draper's

ATLAS OF AMERICAN PAPERMAKING

No. 1 PUBLISHED BY DRAPER BROTHERS COMPANY • CANTON, MASSACHUSETTS



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HIGH LIGHTS: The first paper mill in Massachusetts was established in Milton, Massachusetts, near the mouth of the Neponset River, by David Hinchman in 1728.

The first American mill to make ground wood pulp was erected in the town of Stockbridge in 1861, and its output was used at Lee.

The great dam across the Connecticut River at Holyoke was built in 1847, and the first paper mill began operations there in 1853.

Massachusetts ranks 12th in paper production. It has 89 paper mills and 3 pulp mills; 134 Fourdrinier machines, 37 cylinder machines, 5 Yankee machines and 21 wet machines. Principal products are fine papers, book paper, and bristol board.

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Obituary

J. Gibson McIlvain

J. Gibson McIlvain, 63, chairman of the board of the Downingtown Paper Company, and president of the Downingtown Paper Box Company, Downingtown, Pa., passed away December 3 at his residence, Lowebank, in Downingtown, after a long illness. Mr. McIlvain was prominent for many years in the box board industry.

A son of the late J. Gibson and Elizabeth M. McIlvain, he was born in Philadelphia, July 4, 1881. He attended the Haverford School. In 1920, he became president of the J. Gibson McIlvain Company, a Philadelphia lumber concern, and chairman of the board of the Pennsylvania Society for the Prevention of Cruelty to Animals. He held these positions until he was compelled to retire on account of ill health, but at the time of his death was head of the paper company and paper box company previously mentioned, as well as chairman of the board of trustees of the Hatfield Memorial Home, and treasurer and trustee of the Chester County Council of the Boy Scouts of America. He was often referred to as the Father of Scouting in Chester County on account of his great interest in the Boy Scout movement.

Mr. McIlvain was a man of high type, of sterling integrity, widely known in the trade, and very favorably regarded.

His wife, Isabel Huston McIlvain, and three sons, F. Huston, J. Gibson, Jr., and Robert M., all are living in Downingtown.

Frank A. Murphy Dead

Frank A. Murphy, 70, vice-president in charge of sales of the Beach & Arthur Paper Company, New York, died November 30 at his home, 7-13 Washington square.

Mr. Murphy was associated with the Kimberly-Clark Corporation at the concern's sales office in New York for 27 years. He was in charge of the specialty paper sales division of the Kimberly-Clark organization when he joined the Beach & Arthur Paper Company in 1940.

Mr. Murphy was a member of the Salesmen's Association of the Paper Industry, and the Paper Club of New York.

Surviving are his widow Dorothy and two sisters residing in Philadelphia.

Requiem Mass was celebrated at St. Ignatius Loyola Church, and interment was private.

DeWitt C. Amerine

[FROM OUR REGULAR CORRESPONDENT]

VINCENNES, Ind., December 11, 1944—DeWitt C. Amerine, 72 years old, retired president of the Central Fiber Products Company here, died recently in his home. During his 30 years residence here, he had taken an active part in civic affairs. He had served as president of the Chamber of Commerce three years and as a member of the city council. During recent years he led opposition to high taxes.

He began his career as a cutter boy in a strawboard factory at Piqua, O., when 16 years old and had worked in paper plants at Wabash, Carthage, Kokomo and Eaton, Ind., being superintendent of the latter plant. He came here in 1911 and was one of the organizers of the Indiana Board and Filler Company. He became president of the company in 1922 and retired when the company was merged into the Central Fiber Products.

Charles Caldwell Colbert

[FROM OUR REGULAR CORRESPONDENT]

ELKHART, Ind., December 11, 1944—Charles Caldwell Colbert, 66 years old, founder of the American Coating Mills here, died recently in a local hospital where he had been for ten days. He had been in ill health for the last year. He was born in Lagro, Ind., and is survived by the widow, a daughter and a son, a first lieutenant in the Army.

He came here from Wabash, Ind., in 1910 and founded the American Coating Mills. The new factory was build in 1922. He was president of the company until 1938 when he retired and became chairman of the board of directors. He was the originator of the coating process of paper board which is being used today. He was a 32nd degree Mason and a member of the City Club.

Paper Production for October

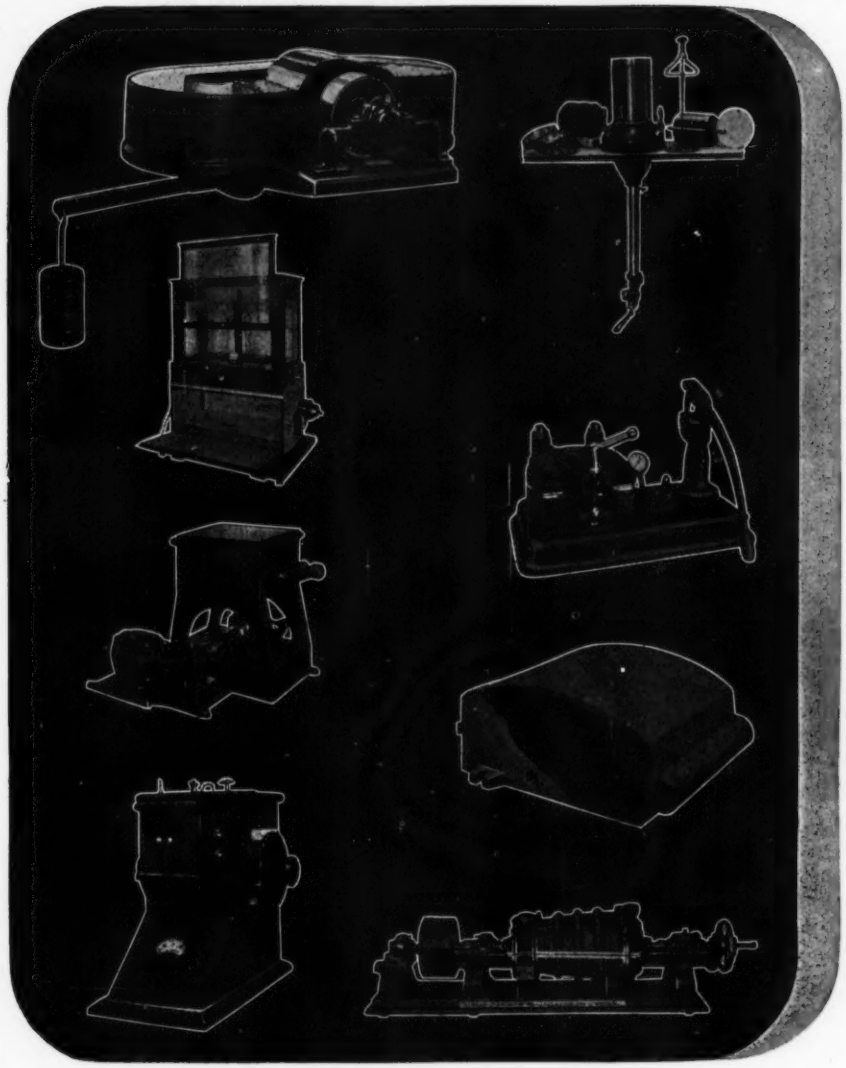
The following data cover all known mills and represent a continuation of the monthly statistics initiated in "Facts for Industry," series 24-2-1. For annual data and a description of the statistics, "Facts for Industry," series 24-1-2 should be consulted. All inquiries concerning these data should be addressed to the Bureau of Census, Washington 25, D. C.

Type of paper	1944 October	1944 September[1]	October 1943
All types	1,500,604	1,421,869	1,453,475[2]
Newsprint	61,741	61,408	65,336
Groundwood papers	50,408	47,787	50,474
Printing	19,736	18,842	16,465
Specialties	30,672	28,945	34,009
Book papers	122,760	117,122	134,659
General printing	90,310	86,917	98,545[3]
Converting papers	32,305	30,128	35,865
Other book papers	145	77	249
Fine papers	86,292	81,931	85,492
Writing papers	65,745	61,994	63,037[3]
Cover and text	3,948	3,187	4,525
Reproduction	4,493	4,008	4,550
Bristols[4]	6,835	7,137	8,482[3]
Thin papers	4,828	5,168	4,505
Other fine papers	443	437	393
Wrapping papers	170,955	157,332	160,628
Bag papers	33,579	29,418	37,431
Glassine	6,954	6,905	7,057
Greaseproof	1,845	2,088	2,247
Vegetable parchment	2,438	2,932	2,575
Converting papers	64,465	61,487	54,016[3 5]
Wrapping papers	61,674	54,504	57,302[3 5]
Multi-wall sack papers	33,042	33,298	31,957
Special industrial papers	22,212	20,267	16,524[5]
Sanitary papers	71,960	64,770	68,303
Tissue papers	13,403	12,707	13,794
Absorbent papers	6,970	7,673	7,647
Building papers	74,770	73,243	79,556
Paperboard	786,091	744,331	739,104
Container board	373,047	354,241	360,270
Folding boxboard	189,769	174,230	174,544
Set-up boxboard	64,261	62,661	63,983
Cardboard	5,844	5,373	5,802
Building board	93,318	89,932	86,156
Miscellaneous other board	59,852	57,894	48,349
Tube stock	38,721	37,730	27,308

[1] Revised.
[2] Includes a small quantity of paper not classified by type.
[3] Data revised to conform with certain changes in paper and paperboard classifications which became effective beginning January 1944. For figures covering other months of 1943, see "Facts for Industry," Series 24-2-5, Table 2.
[4] Includes Government Postal Card Stock.
[5] Includes a small quantity of Special Industrial Papers having a basis weight of less than 100 pounds. Such paper was classified as Wrapping Paper prior to January 1944.

JoBo Paper Mills to Start Soon

YORK, Pa., December 11, 1944—The JoBo Paper Mills, which have acquired the plant at this place formerly operated by the Edgemont Paper Company, Inc. have for the past six or seven weeks been making extensive repairs. It is expected now that the plant will be in production within the next four weeks.



YOUR LABORATORY *will point the way!*

When a manufacturing problem arises, the first answer should come from your laboratory—the answer may be tentative—it may be conclusive.

IF LABORATARY EXPERIMENTS GIVE YOU THE GREEN LIGHT — YOU HAVE A STRONG INDICATION THAT MILL TESTS WILL PAY OFF. IF THE LABORATORY LIGHT SHOWS RED — YOU HAD BETTER WAIT FOR IT TO TURN GREEN — OR TAKE UP SOMETHING MORE PROMISING.

Worthwhile improvements don't come easily — they take time, thought, and experiment. You may waste only a few hundred dollars in the laboratory, but you can waste thousands in the mill. Equip your laboratory to do *everything* on a small scale—from sheet making to screening at different consistencies.

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Slices and Head Boxes • Screw Presses • Micro-Mist Spray Dampeners • Laboratory Equipment
Pulp Washing Systems • High-Speed Beaters • Breaker Beaters • Vortex Beaters • Plug Valves
Flat and Rotary Screens • Thickeners • Deckers • Paper Markers • Roll-Headers

Discusses Stock Preparation

The regular monthly meeting of the Delaware Valley Section of the Technical Association of the Pulp and Paper Industry was held at the Engineer's Club, Philadelphia, Pa., on Friday, December 1, 1944 with Dr. Bixler, the section chairman, presiding.

The speaker of the evening was Dwight E. Jones, vice president of the E. D. Jones & Sons Company who spoke on "Modern Ideas on Stock Preparation" with special emphasis on a detailed description of the Jones-Bertram Beater. A spirited discussion followed.

Those present included: Edw. J. Albert, Geo. M. Arnsteen, Paul C. Baldwin, E. R. Baublitz, D. A. Beiswinger, Charles Beitler, A. L. M. Bixler, R. S. Brookover, L. C. Burnett, H. D. Childers, C. M. Connor, O. C. Cordes, Thage Dahlgren, B. W. Dean, Walter Dempsey, W. P. Dohne, J. Edward Doyle, Jacob Edge, J. M. Farnum, H. J. Farra, Jeanne H. Fisher, J. F. Good, J. L. Granel, Ralph E. Green, Wm. J. Hale, Lois V. Hans, J. C. Harper, Jr., H. F. Hoffmann, Dwight E. Jones, L. T. Kratz, Willard H. Lapp, George Lockbaum, Lester Long, R. P. McGinley, Louise E. McGrath, Alex M. McInnes, Jr., John Macadam, Elmer Mitchell, Edward C. Molin, Frank Myers, I. Newman, L. Newman, J. A. Paciello, Roland Pennock, R. W. Porter, Homer F. Ray, Andrew B. Side, Charles W. Rivise, Chas. A. Shubert, Leon E. Smith, H. C. Speel, W. A. Steele, George M. Suydam, Richard N. Temple, James Traill, Jr., John N. Tuttle, Roy Underdown, K. R. Watt, A. E. Waugh, R. Wiggins, Raymond E. Wilcox, Ed Yerger, and Harry Hulmes.

Pulp Consumers Give $10,000

The Association of Pulp Consumers, Inc., has contributed $10,000 to the War Activities Committee of the Pulpwood Consuming Industries for use in its campaign to stimulate the production of pulpwood. This amount is in addition to the $50,000 which the association contributed about a year ago. In making the contribution, Mr. Dwight L. Stocker, president of the association, stated that the association was very glad to again contribute to the important work of the War Activities Committee of the Pulpwood Consuming Industries.

The Association of Pulp Consumers represents two hundred and seventy-seven paper and paper board mills which depend on purchased wood pulp. They have been cooperating with the Governmental agencies and the domestic pulp producers in their various efforts to increase the production of pulpwood.

D. M. Shapleigh Joins P. & I.

Paper and Industrial Appliances, Inc., New York, N. Y., announce the appointment of D. M. Shapleigh as director of technical sales.

Mr. Shapleigh has had a broad experience in the pulp and paper industry, being formerly associated, over a long period of years, with prominent firms in the industry: American Bewoid Division of Bulkley Dunton Pulp Company, Inc., paper makers chemical Division of Hercules Powder Company, American Delthirna, Inc., and technical sales pulp division of Brown Company.

Mr. Shapleigh's activities will be devoted to technical sales and services for all P & I products including the Defibrator-Chemipulper, Roll-O-Finer Brammer Control, and Smith-Egan Beater.

Western Salesmen Meet

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., December 11, 1944—The western division of the Salesmen's Association of the Paper Industry held one of its most successful "open" meetings on Monday noon, December 4 at the Hotel Sherman and presented to its members and guests Commander W. C. Eddy, head of the Radio Naval Training School, Chicago, and inventor of the famous Eddy Aptitude Test now in full use in the Navy. Guests at the luncheon meeting included Private James Burnett, nephew of Ralph Burnett of American Writing Paper Company, member of the Army Air Force stationed at Chanute Field; "Red" Neblett of the Standard Paper Manufacturing Company of Richmond, Va., and Harry Johnson of the Mohawk Paper Mills of Cohoes, N. Y.

The association announced that Bishop W. C. Conkling, chaplain of the association, would deliver his annual Christmas message on December 18.

The western division also passed resolutions to the family and associates of Ralph W. Remont, president of the St. Lawrence Paper Company, including Sam Boyd, in charge of the Chicago office of St. Lawrence, extending their sympathy for the death of this widely known leader in the paper industry who died on December 1,

E. E. Helm Made General Sales Manager

Edward E. Helm, since 1928 district sales manager in Philadelphia for the Reliance Electric and Engineering Company, Cleveland, has been appointed general sales manager of the company, it is announced by James W. Corey, president.

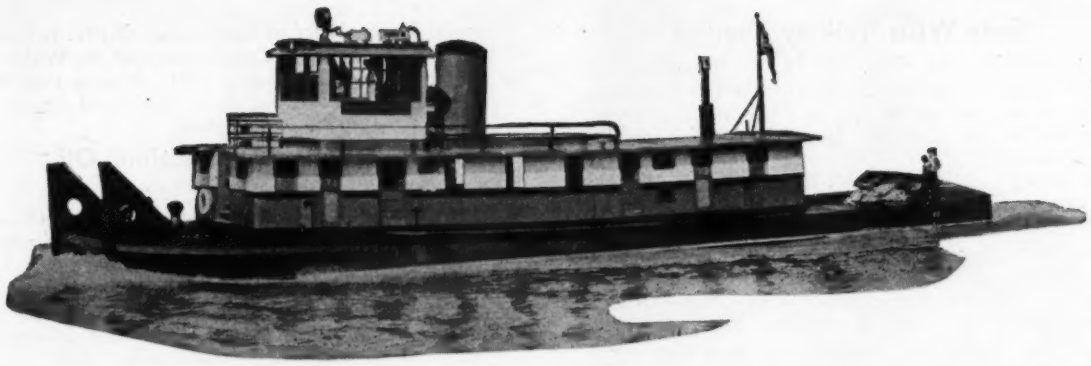
Mr. Helm, who has been with Reliance since his graduation from Pennsylvania State College in 1924, has managed both the Birmingham and Philadelphia territories and has been particularly active in application work in the steel, textile and paper industries in these territories. He is a member of the Association of Iron and Steel Engineers, and the Engineers' Society of Pennsylvania, as well as the Technical Association of the Pulp and Paper Industry.

Kenneth S. Lord will succeed Helm as manager of the Philadelphia district. A graduate of the Massachusetts Institute of Technology, Lord came to Reliance in 1926, and since that time has seen service in the company's Chicago, Pittsburgh, Birmingham and Greenville district sales offices. During 1942-1943, Lord served as chief of the electrical section of WPB's Tool Division, and more recently as director of materials allocation in the Purchasing Department of Reliance. Mr. Lord is a member of the Association of Iron and Steel Engineers, and of the Engineers' Club of Birmingham.

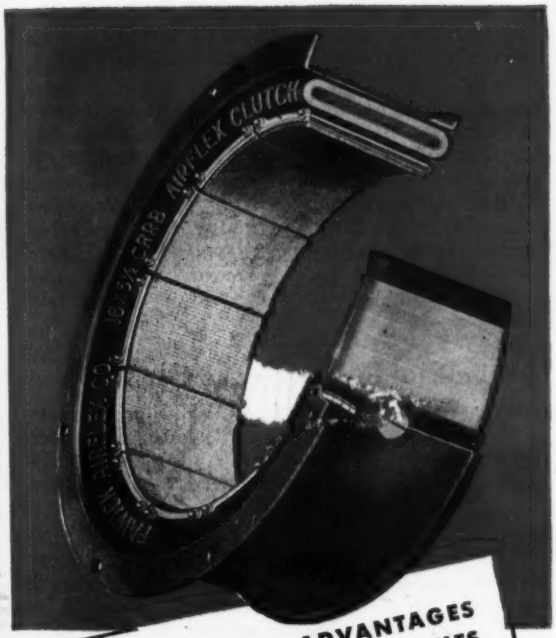
Idaho-Montana Pulp Mills Proposed

Moscow, Idaho, December 11, 1944—Coeur d'Alene last week appeared likely to be selected as the site of a new paper pulp mill proposed for construction by the newly incorporated Idaho-Montana Pulp and Paper company, according to information divulged at the concluding session of the North Idaho Chamber of Commerce meeting.

Articles of incorporation have been forwarded to the Helena, Mont., statehouse by W. F. McNaughton, Coeur d'Alene attorney, it was disclosed. Surveys of the new company tentatively include a pulp mill at Coeur d'Alene and one at Polson, Mont.



THE ONLY CLUTCH



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1. Simple in design and operation
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6. Smooth starting—no jerks
7. Runs cooler—uniform pressure
8. Controls torque by air pressure
9. Greater capacity—more compact
10. Remote control by air valve
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12. Acts as clutch, slip-clutch, brake and coupling.

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Here's a clutch job that only the Fawick Airflex clutch can do.

This tug, driven by a powerful Diesel engine, was thrown from full speed ahead to full reverse in 3 seconds, without damage to clutch, engine or propulsion equipment. That's about equal to slamming your car into reverse while you are going 40 miles an hour.

In thousands of naval vessels, the Fawick Airflex clutch is delivering maneuverability, stamina and ease of operation to a degree never before known.

Your peacetime needs may demand just that kind of service. Our Engineering Department will be glad to make recommendations based on broad experience.

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Goes With Bulkley Dunton

The appointment of Harold W. Kephart, formerly assistant vice-president of Reynolds Metals Company, as head of the newly set up Foil and Packaging Division of the Bulkley, Dunton organization has been announced.

Working with Jack Wilson, head of Bulkley, Dunton's Specialty Papers Division, Mr. Kephart will concentrate his efforts on the development and promotion of packaging materials, including that produced by the recently perfected method of casting protective films on to paper or foil. This comparatively new procedure in making highly versatile packaging materials with or without lamination opens

HAROLD W. KEPHART

up great possibilities in the development of new packages offering superior protection and greater eye-appeal.

Joining Reynolds Metals Company in 1920, Mr. Kephart was associated with that company for 23 years, his last position being assistant vice-president in charge of packaging sales. In 1943 he was one of the founders of Valley Industries, where he engaged in the development and distribution of moisture vapor-proof packaging materials for the packing of machine parts for the U. S. Ordnance, Aircraft and Signal Corps.

A native of Cleveland, Ohio, Mr. Kephart is a graduate of Wesleyan University, where he was active on the football and track teams. He saw service during World War I as an ensign in the Navy, and took a special course at the Annapolis Naval Academy.

Having lived in many parts of the United States, including New York, Philadelphia, San Francisco, Louisville and Richmond, he is well known in packaging circles from coast to coast, and has the reputation of being one of the outstanding experts in the packaging field.

Abe Cooper Buys Two Paper Mills

Abe Cooper of Watertown and Syracuse, N. Y., according to a press report on Wednesday, acting in behalf of companies directed by him, has purchased the Tarentum Paper Mills of Tarentum, Pa., and the Cheboygan Paper Mills of Cheboygan, Mich., it was announced Tuesday. Mr. Cooper has sold the Waterfalls Paper Mills of Mechanics Falls, Me., to Pond's Extract Company, makers of facial tissue and creams.

Used Machinery Restrictions Off

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 13, 1944—Restrictions on the control of paper mill machinery were modified by the War Production Board today.

Paper mill machinery Order L-83 was amended to remove restrictions on used and reconditioned machinery. As amended, the order restricts delivery of new paper mill machinery only. For the delivery and acceptance of new paper mill machinery, authorization must be obtained on Form WPB-1319 or GA-1456.

The amended order also removes the limitation, formerly $2,000, for repair and maintenance parts that can be obtained with MRO ratings, but the use of these ratings must be confined strictly to the maintenance and repair parts as defined in CMP-5, paragraph (b).

The amended order defines "paper mill machinery" as all new machinery and equipment used in the production and processing of pulp, paper and paperboard, including containerboard, and converted paper products, with specified exceptions. The exceptions are: machinery for the manufacture of fiber shipping containers, folding cartons, and set-up boxes, formerly controlled by Order L-332, recently revoked, and printing trades machinery defined in Limitation Order L-226.

Windham Fibres To Operate Mill

PORTLAND, Maine, December 11, 1944—Organization of Windham Fibres, Inc., to manufacture fiber board at the plant of the former Androscoggin Pulp Company in South Windham was announced here today.

George C. Soule of South Portland, was elected president of the new corporation, said plant renovations and installation of machinery would be started immediately and that the new corporation should be in production in the second quarter of 1945 with at least 40 employees.

Directors of the corporation include several members associated with Maine Steel, Inc., of South Portland and the Steel Products Corporation of South Windham. The directors include Edward C. Hyde, Maine chairman of the War Production Board, and Robert Braun of Portland, president of five Maine textile mills.

St. Regis Addition Nearly Completed

A new addition to the Taggart plant of the St.Regis Paper Company, Oswego, N. Y., a press dispatch states, which is now nearing completion, will provide space for additional facilities needed in the operation of the largest multi-wall bag factory in the world.

At present, the production is 6,500,000 bags per month. The peak production was in August, with 25 working days, there was an output of 7,580,000 bags. Production in September, with 22 working days, dropped to 5,577,000 bags due to the fact that with the reopening of school the plant lost 92 workers. October production was 6,507,000 bags and this output will be equaled in November, it was stated.

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That's Megatherm—high-frequency electronic heating at its best—a modern tool with uses as broad as industry itself.

In the processing of plastics, foods, drugs, candy, paper, textiles, wood products, and in printing, book-binding . . . in the surface hardening of metals, brazing, soldering, and annealing . . . to mention only a few of an endless number of possible applications.

Megatherm is available in a range of compact, efficient models—powers from 3 kilowatts to 100 kilowatts. One of these models is right for your work.

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INDUSTRIAL ELECTRONICS DIVISION

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Newark 1, N. J.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending December 8, 1944

STOCKS

	High	Low	Last
A. P. W.	4⅛	3⅞	4⅛
Armstrong Cork Co.	45	43¾	45
Celotex Corp.	14¼	13¾	14
Celotex Corp., pf.	19⅛	18⅛	18¾
Certain-Teed Products Corp.	7¼	7	7⅛
Certain-Teed Products Corp., pf.	131½	129¼	131½
Champion Paper & Fibre Co.	31¼	29½	31¼
Champion Paper & Fibre Co., pf.	114½	114	114
Congoleum Nairn Co.	25½	24½	25½
Container Corp. of America	29	28¼	28¼
Continental-Diamond Fibre Co.	11	10¼	10½
Crown-Zellerbach Co.	21¼	20⅞	21¼
Crown-Zellerbach Co., pf.	105	103¾	104⅝
Dixie Cup Co.	19	17	19
Dixie Cup Co.,—A.	48¼	47	48
Flintkote Co.	23	22⅜	23
Flintkote Co., pf.	....	....	....
Robert Gair	5	4⅜	4⅝
Robert Gair, pf.	17¼	16	16¾
International Paper Co.	21	18¾	20⅞
International Paper Co., pf.	90	88⅞	89⅞
Johns-Manville Corp.	102½	96½	102½
Johns-Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	39	37⅞	38¾
Mac Andrews & Forbes	29⅝	29⅝	29⅝
Mac Andrews & Forbes, pf.	....	....	....
Masonite Corp.	43⅜	40	42½
Mead Corp.	12⅞	12½	12⅝
Mead Corp., pf. A—6%	100	98¼	98¼
Mead Corp., pf. B—5½%	94	93	93
National Container Corp.	12¾	11⅞	12⅛
Paraffine Companies, Inc.	57⅞	57	58¼
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	16⅛	15½	16
Rayonier, Inc., pf.	34⅝	34⅛	34½
Ruberoid Co.	34	33	34
Scott Paper Co.	45	43¾	43¾
Scott Paper Co., pf.	110	110	110
Sutherland Paper Co.	33	30¾	33
Union Bag & Paper Corp.	15½	14¾	15½
United Paperboard Co.	6¾	6½	6¾
U. S. Gypsum Co.	80	78	79¾
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	24¼	23½	23⅞
West Virginia Pulp & Paper Co., pf.	....	....	....

BONDS

Abitibi Pulp & Paper Co. 5s '53	107½	106	107
Celotex Corp. 3¾s '55	....	....	....
Certain-Teed Products Corp. 5½s '48	103	102¾	102¾
Champion Paper & Fibre Co. 4¾s '50	....	....	....
International Paper Co. 6s '55	106	105⅝	105⅝
International Paper Co. 5s '47	103¾	103½	103½
Mead Corp. 3½s '53	....	....	....
West Virginia Pulp & Paper Co. 3s '54	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending December 8, 1944

STOCKS

	High	Low	Last
Great Northern Paper Co.	37½	36½	37½
Hummel-Ross Fibre Corp.	7½	7	7⅜
St. Regis Paper Co.	6¾	5⅜	6¼
St. Regis Paper Co., pf.	....	....	....
Taggart Corp.	6½	6	6⅛

BONDS

American Writing Paper Co. 6s '61	....	....	....

Discuss Value of Abitibi Bonds

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 11, 1944—Devotees of the stock market have had a busy week trying to figure out the probable value of Abitibi Power and Paper Company bonds. The optimists concerning the position of the bonds under the proposed reorganization plan have apparently been responsible for the 5% bonds selling at new high levels, around $102 (ex. the December 30 payment), against $91 on the same basis a week ago.

Taking this price of $102, some individuals deduct the payments expected to be received early in 1945 of $6.91 ($4.30 principal and $2.50 premium on U. S. interest and $0.11 exchange) to arrive at a net cost of $95.09 for a new $110 bond. This is equivalent to a price of $86.45 per $100 for a new 5% bond payable in Canadian funds, U. S. dollars or Sterling. The belief is general that the company's ability to retire bonds will probably improve the market price of the new bonds above this figure. However, the plan is being opposed by the 7% preferred shareholders' committee, so that it is not certain that it will be approved. Moreover, in view of the fact that 52.27% of the principal of the new bonds represents accrued interest and so will be taxable on redemption, any investor's valuation of the bonds will depend upon the tax bracket in which he is placed.

Considerable speculation is prevalent as to the ability of the company to reduce its debt which, under the plan, will start at $53,093,700, down to the $35,000,000 maximum before dividends can be paid on the new preferred stock.

By the end of 1943, working capital is expected to be around $35,000,000, according to the Financial Post of November 11. Out of this $10,115,315 on account of principal and interest will have to be paid on December 30. Then, if the plan is approved, unsecured creditors will be paid about $900,000 (the maximum limit). Another $1,473,350 in Canadian funds will be required for the December 1, 1944, interest on the new bonds. Added to this an unknown amount which may be as much as a million dollars, will have to be paid.

Offer Bowater's Mortgage Bonds

MONTREAL, Que., December 11, 1944—According to a despatch from Newfoundland, the purchase and offering by a Newfoundland investment house of $2,500,000 of Bowater's Newfoundland Pulp and Paper Mills Limited 4% first mortgage bonds has made financial history in Newfoundland, this being the first time that a bond issue of this size has been underwritten there. Furthermore, it is anticipated that most of the bonds will be placed with local interests. The proceeds will be used to refund the whole of the outstanding $2,325,500 of first mortgage 5% bonds, due in 1968, which have been called for redemption at 103 and accrued interest. The new bonds are offered at 100 and accrued interest, to yield 4%. According to an estimate of the company, sales of newsprint and wood pulp for the current year will approximate 200,000 tons, and income available for payment of interest on the first mortgage bonds and debenture stock, before providing for depletion and depreciation, will exceed $2,460,000.

Rayonier Elects Vice Presidents

William E. Breitenbach, resident manager of the Port Angeles (Wash.) Division of Rayonier Incorporated and Martin N. Deggeller, manager of the Woodlands Division, were elected vice presidents by the board of directors, at a meeting held in New York last week, according to an announcement made by Edward Bartsch, president of the company. In their new positions, Mr. Breitenbach will have general supervision of the Northwest mills of the company, and Mr. Dreggeller will be in charge of all the company's extensive timber operations.

This promotion is a reward to Mr. Breitenbach for a long record of excellent achievement with the company. He has been with Rayonier and its predecessor companies since the first mill of the group began operations at Shelton, Wash., in 1927. A graduate of the University of Wisconsin, he was chief chemist at the Shelton Division for two years. After the Grays Harbor Mill was built, he joined

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HUBBS & HOWE COMPANY
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HUBBS & HASTINGS PAPER CO.
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HUBBS PAPER CO., INC.
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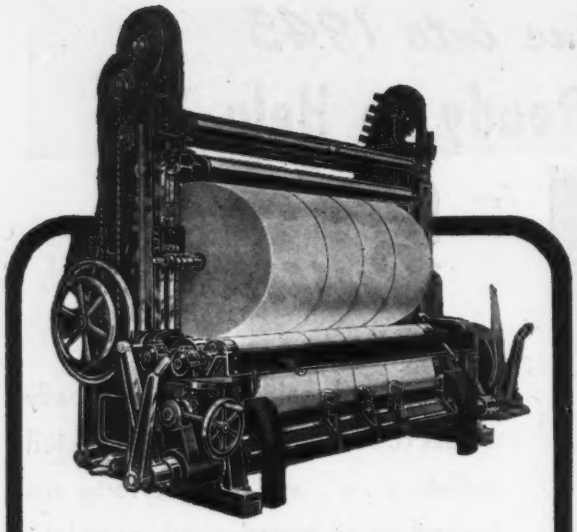
GARDEN CITY PAPER MILLS CO., LTD.
ST. CATHARINES, ONT.

CANADIAN VEGETABLE PARCHMENT PAPER CO., LTD.
MERRITTON, ONT.



FOR A PRACTICAL POSTWAR PLANNER

Practical postwar planners do not look for slitters and roll winders with "Rube Goldberg" trimmings. They want winders that will keep well ahead of the paper machine at any paper making speed; winders that are easy to thread and that turn out rolls uniformly wound from the core out. For the finishing room they want fast slitters equipped for quick respacing of cutters and designed to convert rolls of controlled density, accurate as to strip width.

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Write for further interesting details.

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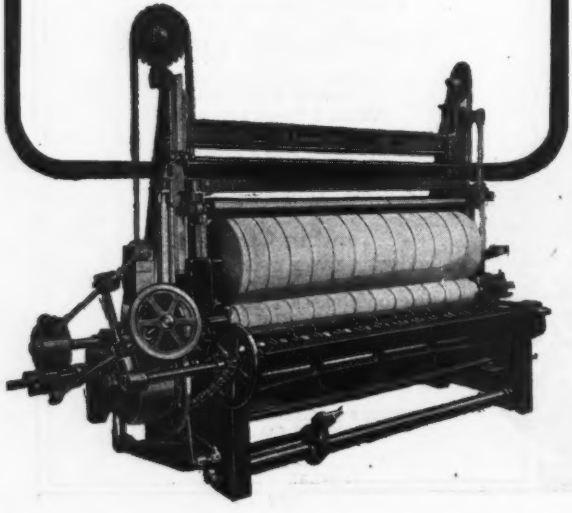


the Hoquiam staff in the same capacity. In September 1941, he became production manager of the Port Angeles Division, and subsequently earned the promotion to resident manager, effective March 1, 1942. Mr. Breitenbach's headquarters are at the Port Angeles Division and he resides with his family at 1328 East 2nd Street.

Mr. Deggeller has been associated with the company for a number of years and was formerly connected with James D. Lacey & Co., timber factors of Chicago. He is a graduate of the University of Washington, a trustee of the Washington Forest Fire Association and served on Governor Langley's Forest Advisory Committee. In August 1943 he was made manager of Rayonier's Northwest Woodlands Division and under his supervision, the Company has substantially extended its timber holdings and operations. Recently the headquarters of the Woodlands Division were transferred to Olympia, Wash., where Mr. Deggeller now resides with his family.

Butterworth Acquires Textile Finishing

H. W. Butterworth & Sons Company, Philadelphia, oldest and largest manufacturers of textile finishing machinery in America, announce their purchase of the Textile Finishing Machinery Company, Providence, R. I. The plant at Providence will be continued in operation as a division of the Butterworth organization under the management of Edward Wharmby who, for many years, has been associated with the purchased company. "The additional production facilities acquired through this purchase will help us materially in relieving our already overburdened manufacturing organization" says Harry Butterworth, president, "and will put us in a better position to supply the tremendous shortage in textile finishing machinery."

After November 1943 The Textile Finishing Machinery Company went into receivership and was acquired by Jacob Ziskind. Realizing that the textile manufacturers of the world would soon feel the shortage of finishing machinery, and with the idea of saving the industry, Jacob Ziskind approached the Butterworth organization. He found them in full agreement with him as to the situation. The Textile Finishing Machinery Company was acquired by Butterworth on December 7, 1944.

Warren Completes Refunding Plan

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., December 11, 1944—S. D. Warren, fine paper manufacturer, has completed its refunding program, having sold to a group of insurance companies $4,000,000 first mortgage 4% bonds, due Nov. 1, 1959, with the proceeds of which it will retire on December 30, $1,766,000 first 4½s and $2,299,000 convertible 4¼% debentures, both due in 1952. Latter two issues will be paid off at 102¼ plus interest accrued from November 1 to December 30. Old Colony Trust Company has been appointed trustee of the new 4s. These bonds have a sinking fund beginning on Nov. 1, 1950.

The company has also arranged a $1,000,000 five-year serial loan with the First National Bank of Boston. Nearly all the proceeds of this loan will be available for general corporate purposes.. When it is possible to do so, the company plans to make extensive improvements to its physical plant.

Cooper DENSICAST FOR LONG LIFE

DIGESTER NECK CASTING

The refined grain structure of Densicast stainless castings makes them stand up longer in sulphite-mill service. This denser structure is secured without altering the chemical composition of standard analyses. The structure does raise the physicals and increases the corrosion-resistance of Densicast stainless, and it does so to a marked extent.

THE COOPER ALLOY FOUNDRY CO.
145 Bloy St., Hillside, N. J.

THE Cooper ALLOY FOUNDRY CO.
STAINLESS—MONEL—NICKEL

THE *Only* ALLOY FOUNDRY WITH *All* THESE FACILITIES

- Laboratory control over raw materials and finished products.
- Dual foundry . . . both hand and machine molding.
- Electric arc and high-frequency-induction melting furnaces.
- Centrifugally-cast castings.
- Heat treating of Castings up to six feet.
- X-ray and Gamma-ray inspection.
- Precision Castings.
- Machine shop . . . specially equipped for finishing stainless steel.
- Improved cleaning . . . including Lustracast electrolytic finishing which leaves all surfaces bright.
- Castings furnished rough, polished or fully machined . . . one ounce to two tons.
- Development of special alloys to meet unusual requirements.
- Technical consulting service.

ARMY E NAVY

Newsprint Inventory Ceilings Unchanged

WASHINGTON, D. C., December 13, 1944—Present newsprint inventory ceilings fixed by Newspaper Limitation Order L-240 will not be removed at this time, and newspaper publishers in the United States must immediately reduce their December orders on Canadian and domestic mills to bring their inventories below these ceilings, before December 31, 1944, Col. J. Hale Steinman, director of the War Production Board Printing and Publishing Division, announced today.

The newsprint ceilings provide in general that newspapers in the northern, eastern and central States may not have more than 40 days' newsprint in inventory, and papers in the southern and western States not more than 65 days' supply at the end of the year. The maximum supply permitted under the limitation order is based on the average daily rate of allowable consumption for the first six months of 1944.

A report on the present situation in newsprint was laid before the Newspaper Industry Advisory Committee in session here yesterday by Colonel Steinman, and received the unanimous approval of the committee.

In announcing that the inventory ceilings would be rigidly enforced, Colonel Steinman said their retention had been found essential because of the tightness of the newsprint situation.

While it had been hoped that the inventory restrictions could be removed, he said, it cannot be done at this time in view of the increasing military demands for paper.

Arrangements have been made with Canadian officials, he said to earmark the 200,000 tons of newsprint allocated monthly to the United States. If orders from United States publishers, Government agencies and other customers fall below the Canadian production allocated for export to the United States, the excess will be held subject to direction of WPB.

W.P.B. Announces Appointments

WASHINGTON, D. C., December 13, 1944—J. A. Krug, Chairman of the War Production Board, today announced the appointment of Hiland G. Batcheller as Chief of Operations for the War Production Board, with authority to handle broad policy questions under the direction of the Chairman and to act as Chairman during the Chairman's absence from the city. Mr. Batcheller returned to WPB from the steel industry in September to take the post of Operations Vice Chairman.

After Mr. Krug had made his announcement, Mr. Batcheller announced the appointment of Harold Boeschenstein as Operations Vice Chairman. Mr. Boeschenstein had been serving as Mr. Batcheller's deputy in the Vice Chairman's office. Prior to that he had been acting director of the Forest Products Bureau and director of the Controlled Materials Plan Division. He has been with the War Production Board since November 1942.

Patent No. on Special Cone Belt

The patent number given to the special cone belt of Alexander Brothers, 406 N. 3rd street, Philadelphia, in connection with the article entitled, "A New Development for Increasing Power Transmission Efficiency in Paper Mills" in the issue of November 9 of the PAPER TRADE JOURNAL, was incorrect. The number of this patent is 2,220,266.

A Favorite in Paper and Board Mills Throughout the Industry

NO. 179—HEAVY DUTY KNIFE & FACE GRINDER

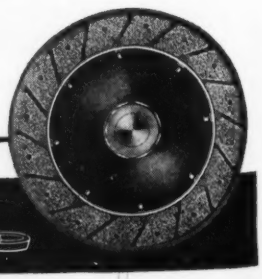
This grinder is correctly proportioned, ruggedly built, good for long, efficient service.

The grinding head may be set for square grinding or swiveled by hand for concave grinding.

Though designed primarily for conditioning paper, chipper, rag and veneer knives, an angle bar can be furnished instead of the knife bar for straight face grinding.

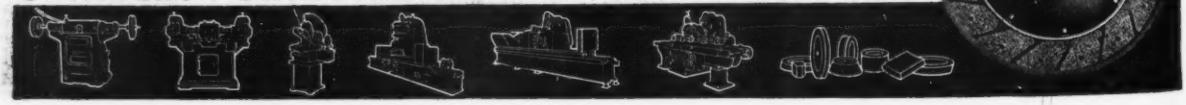
No. 179 comes equipped with "Bridgeport" Improved 26" Sectional Grinding Wheel, consisting of twelve abrasive sections locked in a cast steel chuck. This type of wheel is well known for great strength, superior accuracy and cool running. The sections are readily adjusted to compensate wear, and when completely worn out, they may be replaced at relatively small cost. Full details on request. Please describe your grinding needs.

THE BRIDGEPORT SAFETY EMERY WHEEL CO., INC., BRIDGEPORT, CONN., U.S.A.



Bridgeport

GRINDERS • GRINDING WHEELS • BUFFING LATHES



FOR *Whiteness* IN BONDS, WRITINGS, BOOK & LEDGERS

For many years Helmerco Blue has been a standard product for tinting white bond, writing, book and ledger papers. Added at the beater, it has excellent working properties and good light fastness. Fine light blues in the same group of papers can also be produced with Helmerco Blue.

In the tinting of paper coatings, Helmerco Blues produce the much desired high white shades in any formula.

Our Technical Service Department will be glad to work with you in developing special dyes for specific purposes or in advising you on the use of H&M colors.

RANGE OF SHADES FROM RED TO GREEN
HELMERCO BLUE

M 4 R Conc.	2 G B Conc.
M 2 R W Conc.	M 2 G Conc.
M G W Conc.	M 4 G Conc.
M G Conc.	M 5 G

COLORS BY CALCO

Heller & Merz Department

CALCO CHEMICAL DIVISION • AMERICAN CYANAMID COMPANY

Bound Brook, New Jersey

New York • Chicago • Philadelphia • Boston • Charlotte • Providence

these L's and T's give more "ELBOW ROOM"

When tight quarters turn piping jobs into jigsaw puzzles, prefabricated ARMCO Spiral Welded Pipe provides a money-saving solution.

This sturdy pipe is custom-built for each job. Tees, wyes and elbows are made to measure, and welded to straight pipe runs. This conserves space, simplifies installation and eliminates a pair of flanges at every bend.

Efficient operation is also assured. Armco pipe has high flow capacity and is easy to keep clean. The fewer flanges mean fewer joints and less chance for leaks.

Specify ARMCO Spiral Welded for wartime pipe replacements, and keep it in mind when you plan your post-war improvements. Armco pipe sizes range from 6 to 36 inches; wall thicknesses from 7/64 to ½-inch. For prices and more information just address The American Rolling Mill Company, Pipe Sales Division, 2711 Curtis Street, Middletown, Ohio.

ARMCO

Spiral Welded Pipe

DEEDS ACREAGE FOR PARK

(Continued from page 11)

George W. Johnston, now is foreman in charge of Centralia and Nepco lake, succeeding W. J. McGrogan at Centralia, who retired last fall after continuous duty at the Centralia plant since it was started 31 years ago. Mr. Johnston, who has been with the company since 1923, has had charge of Nepco lake operation since it was created in 1925.

Central Donates To Mess Fund

The Central Paper Company, Menasha, Wis., has presented a donation to Company A. Twin City unit of the Wisconsin State Guard for its mess fund, it was announced last week.

Marathon to Honor Employees

A dinner honoring 20 new members of the Marathon Corporation's Quarter Century Club will be held Wednesday, December 13, at North Shore Country Club, near Neenah, Wis. D. C. Everest, president and general manager of Marathon, will be the principal speaker, and will present the new members with certificates of membership and another certificate to each for a gold watch, to be delivered after the war.

Charles Radtke Retires

Charles Radtke, night superintendent of the Fox River Paper Corporation, Appleton, Wis., since 1920, retired December 1 after 46 years of service. He was the guest of honor at a farewell party Sunday evening, December 3, and was presented with a gift. He began work at the mill as a beater man in 1899 and later became a beater engineer.

Paper Men Attend N.A.M. Meeting

Among those who attended the War and Reconversion Congress, sponsored last week in New York City by the National Association of Manufacturers, were A. C. Gilbert and A. C. Haselow, president and secretary of the Gilbert Paper Company, Menasha, Wis., and A. B. Hansen, president and general manager of Northern Paper Mills, Green Bay; W. J. Servotte, vice president of the Bay West Paper Company, Green Bay, and H. G. Wintgens, vice president, and John Maloney, sales manager of Hoberg Paper Mills, Green Bay, Wis.

Pfc. Hann Dies in France

Pfc. V. Robert Hann, son of V. R. Hann of the Merrimac Paper Company, Inc., Lawrence, Mass., according to advice from the War Department, was wounded in action in Belgium on October 26 and died in France as a result of his wounds on October 29. Pfc. Hann was with the 104th Division, Company I, 415th Infantry Regiment and was in the European theatre of war only six weeks before he died.

Ends Restrictions on Wax For Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 13, 1944—Restrictions on the use of petroleum wax in the manufacture of waxed paper have been removed, the War Production Board reported today. This change was effected by an amendment to Conservation Order M-351, which prohibits the use of waxed paper for wrapping or packaging certain products and restricts its use for other products, WPB Paper Division officials said.

Paper Sales Higher

Wholesale sales of paper and products for the first ten months of this year were 3 percent higher than for the corresponding period last year, the Bureau of Census reported, based on figures of a representative group. The total sales for the period were $78,802,000.

Sales by the same group totaled $6,781,000 in October, a gain of 8 percent over September, but 3 percent under those for October last year. Inventory reported in October by a similar group of firms gained 1 percent over September, and was 2 percent above that of October last year.

V-Belt Handbook

Believed to contain the greatest amount of data ever assembled in a similar volume, The B. F. Goodrich Company, Akron, Ohio, has just published a 74-page V-Belt Handbook for Industrial Applications. Copies are available upon request.

The handbook discusses the operating advantages of V-belts, qualities to seek in the product, installation and care, sheaves, selection of the V-drive, and general information covering the whole field.

Particularly important to the designer, manufacturer, or operator of equipment in which V-belts can play an invaluable role is the vast amount of data on every phase of the subject which is carried in the volume. This includes tables on installation and take-up allowances, listing of five cross sections and complete variety of V-belt lengths, service factors, general belt selection table, combination groove or standard cast iron drives, stock drives, standard drives, V-Flat drivers, Quarter turn drives, sheaves, belt speeds, horsepower ratings of Multi-V belts, corrections for arc of contact and exact speed of driven machine, standard groove dimensions for industrial V-belt sheaves, together with sheave dimension tables.

New Lowther C-Saw

Cutting through a 24-inch hardwood tree in less than 3 minutes, and through 11 inches of spruce in 7 seconds, are records of the new Lowther C-Saw, manufactured by Harry A. Lowther Company, 141 West Jackson Blvd., Chicago 4, Ill.

The constant centered drive, a patented feature, insures belt alignment no matter what the angle. The saw operates with equal smoothness at any angle on or off the ground.

A WELL ENGINEERED INSTALLATION AT S. D. WARREN COMPANY, MANUFACTURERS OF QUALITY PRINTING PAPERS, CUMBERLAND MILLS, MAINE . . . ASSISTED BY A WARREN PUMP.

Paper Mills place a premium on reliability and performance. At Cumberland Mills the plant hydraulic elevator pump has a dual drive turbine and synchronous motor.

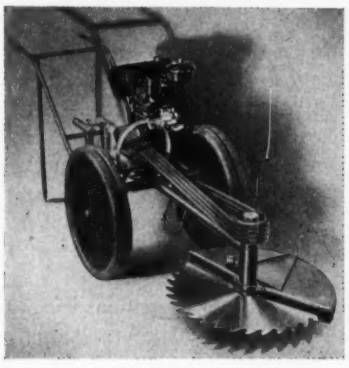
The turbine driver is used to regulate heat balance and to supply process steam. Pump requirements are thus served with by-product power. The synchronous motor generates when the steam demand exceeds the pump load and operates as a motor when the demand is less. Pump power costs are reduced to a minimum.

In addition to building pumps for every paper mill service, Warren cooperates with plant engineers in working out money-saving installations.

WARREN PUMPS

ARMY NAVY E

WARREN STEAM PUMP COMPANY, INC.
WARREN, MASSACHUSETTS



THE NEW LOWTHER SAW

Four 112 inch V-belts connect two constant centered drive pulleys. Wheels have needle bearing and have heavy-duty industrial type dual pneumatic tires as optional equipment for easy rolling over loose, sandy or soft ground. 6 hp air-cooled engine, exceptionally economical of fuel; frame, tubular welded steel, and the axle, heat-treated steel.

30-inch blade with extra large teeth and extra deep gullets, minimizing file and upkeep. Saw speed is 1150 rpm.

Details, illustrations and prices may be had by addressing the manufacturer.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Convention, Commodore Hotel, New York, February 19-22, 1945.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

EMPIRE STATE SECTION. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

CHICAGO PROFESSIONAL PAPER GROUP—Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

MANPOWER UTILIZATION

Prominent among the major industries, the paper industry has contributed substantially to the solution of the number one industrial problem in wartime. Trade associations have been of incalculable assistance in conserving the inadequate labor force for maintaining operations. Trade publications too, have cooperated to a substantial extent to enhance the successful progress of the war. This wide cooperative effort in a period of strife is explained in some detail in the book, "Industry Manual of Manpower Utilization Case Histories," just issued by the War Manpower Commission, 1778 Pennsylvania avenue, N.W., Washington 25, D. C. More than one hundred associations are, states the Commission, participating in the program which is "a plan to help industry help industry." It is sponsored by the Industry Associations' Committee, Bureau of Manpower Utilization, War Manpower Commission.

The case histories included in this manual of particular interest to the paper industry are the reports of manpower saving devices and methods by the American Paper and Pulp Association, the Brown Company, the Waterproof Paper Group, the Paper Stationery and Tablet Manufacturers Association, National Paper Box Manufacturers Associations, and the Folding Paper Box Association. Much of this material has been published in previous issues of the PAPER TRADE JOURNAL during the last two years. These accounts of how various divisions and plants in the paper industry have aided in the progress of the war, despite a dwindling labor force, are testimonials of the great resourcefulness of American labor and management. The remarkable record established by American industry as a whole, and by the paper industry cases cited in these reports, could never have been attained and continue to be maintained at its current high level, without the conspicuous capabilities of American enterprise.

In the conservation of manpower program adopted by many concerns within the industry are numerous examples of ingenuity and the development of very many new and more efficient methods for doing the old job. Improved practices have contributed greatly and the more extensive use of machinery has also been a very big and important factor. Take the handling of pulpwood as an example. "We have saved thirty men," a report states, "formerly employed in unloading pulpwood from cars on to the ground, by using a steam driven hoist and a gas drag line, both equipped with grapples for that purpose." In the case of unloading raw material another report states: "Unloading of raw material for beater room by arranging for the receipt of material in so far as possible, so that this material can be used directly from the car to the beater room, saving approximately 100 man hours a week. In another case the elimination of cutters was profitable, a report states: Because of rigid sheet size specifications on certain pulps, the former method was to cut oversize on the dryer layboy and then trim to exact dimensions on press cutters. Due to this extra step in the process, additional men were required. By continual experimenting and various minor adjustments on the layboy cutter, it is now possible to cut these pulp sheets direct on the dryer and the press cutter step was done away with."

A rather drastic reduction of workers is cited in one report which states: "Formerly, 23 women were needed to sort rags in the rag sorting department. By a change in procedure and by mechanization the number has been reduced to two." An efficient production plan introduced into a department of one paper mill is reported as follows: "Our towel department formerly operated three shifts per day, five days per week. A production plan has been devised and put into effect, which increases efficiency under present government production restrictions. Under this plan the department operates two shifts per day, six days per week. The department now uses 18 men and under the old system 30 were employed." A report of a substantial saving in labor by one concern states: "By the use of two portable pulpwood slashers, operated by gasoline, the estimated average capacity was 10 cords per day for each machine attended by a crew of 3 men. The same work would be accomplished manually by 4 men sawing on yards, averaging 4½ cords per day. The saving in labor here is 25%, or two men on two units. We find that older men, men of lower physical stamina and even men who will not produce pulpwood in four foot lengths, can be used on machine operation, or for falling and limbing out timber into either full or long log lengths."

The increased use of power-driven equipment has, of course, been of almost vital importance in the paper industry, as this case report states in reference to the installation of new equipment in a laminating department: "(1) Installation of overhead electrical

hoists for movement of rolls of stock. (2) Slitter attachment on laminator, which, in the manufacture of certain products, eliminates an extra operation, thus reducing man-hours 33⅓%. (3) Installation of bulk storage asphalt tank which eliminates handling in drums from trucks and freight cars. Is now pumped from tank car or tank truck directly into storage. (4) Installation of Mono-Rail system from plant to car loading dock, which cut man hours in handling about 50%. (5) Special designed hoist arrangement for packing operations which reduced man hours 50%."

The above unedited reports are only a very few among hundreds of reports included in this manual. In almost all cases the adoption of a new plan of work, or the installaton of new machines, has overcome the handicap of inadequate manpower and at the same time has greatly increased former efficiency and resulted in lower costs. The paper industry has for many years been a mass-production industry. As machinery has had to be more largely depended upon to replace the work formerly done by men and women, the trend to further machinization in the industry seems very plain and it may be found essential to earn a fair profit in the highly competitive paper market expected in the post-war years.

Michigan Div. To Meet Dec. 21

The next meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association, Inc. will be held on Thursday, December 21, at the Park American Hotel in Kalamazoo. Dinner will be served at 6:30 P.M.

W. R. Harris of the Industrial Engineering Department, Westinghouse Electric and Manufacturing Company, will speak on Rototroal Application in the Paper Industry.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
October 28	92.7	October 30	88.5
November 4	94.1	November 6	89.9
November 11	92.3	November 13	89.6
November 18	91.7	November 20	91.4
November 25 (Revised)	88.2	November 27	87.6
December 2	*92.2*	December 4	92.2

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3	91.0	88.3	89.6	89.6	82.0	87.8
1944*	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	88.2	92.5	*91.9*	..	..

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date	82.6	71.3	82.6	86.0	97.2	91.4	88.5	*88.7**
Year Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	..

* Revised.

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

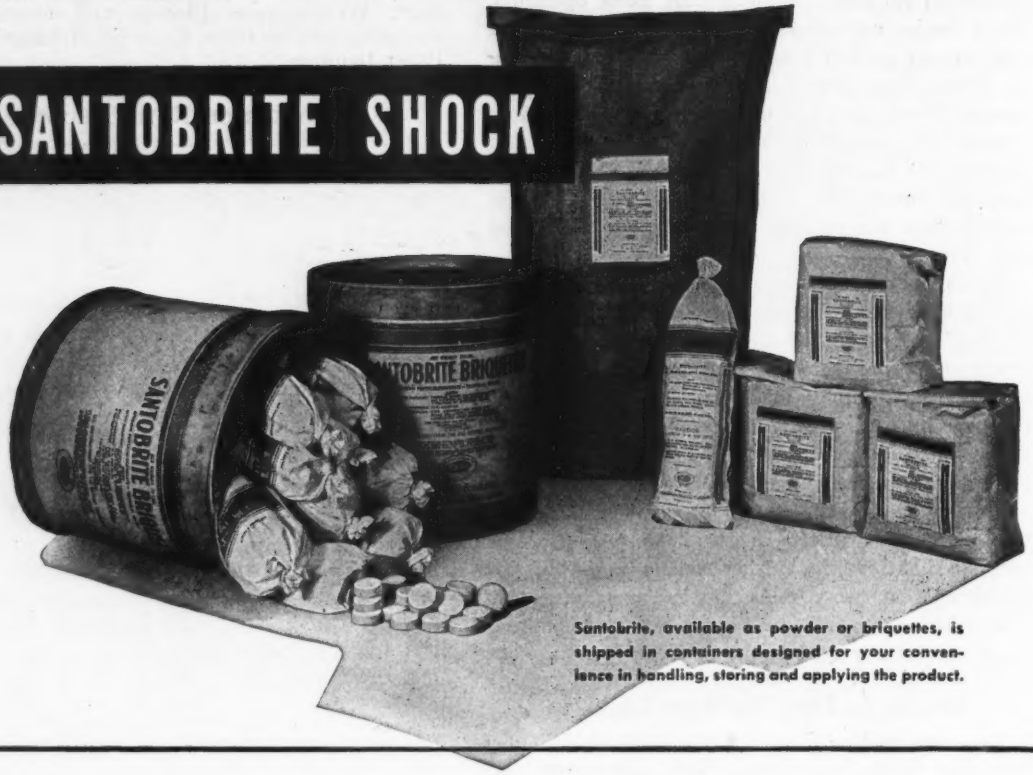
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1938	.. 56	63	63	60	60	59	59	69	70	73	67	61	64
1939	.. 65	73	76	74	69	73	68	77	82	91	88	77	77
1940	.. 78	75	74	76	82	85	77	79	78	85	83	77	78
1941	.. 81	88	89	89	91	94	92	98	95	99	98	90	92
1942	..102	101	101	95	82	72	68	75	76	81	82	77	84
1943	.. 86	88	94	94	96	94	89	96	94	94	93	87	93
1944	.. 90	96	95	96	96	96	85	96	92	95	*95*	..	..

Week ending Oct. 28, 1944—95
Week ending Nov. 4, 1944—96
Week ending Nov. 11, 1944—96
Week ending Nov. 18, 1944—96
Week ending Nov. 25, 1944—91
Week ending Dec. 2, 1944—*94*

† Per cents of operation based on "Inch-Hours" reported to the National Paper board Assn.

It pays to give slime organisms a

SANTOBRITE SHOCK



Santobrite, available as powder or briquettes, is shipped in containers designed for your convenience in handling, storing and applying the product.

PAPER mills have found the regular application of Monsanto Santobrite (Sodium salt of Pentachlorphenol) highly efficient in the control of slime. And, experience has shown, that a double dose of the chemical periodically, say every week or ten days, assures more adequate protection against these enemies of paper production.

Shock treatments at intervals are advisable because, under certain conditions, organisms build up resistance to any toxic when exposed to applications that are uniform day after day.

Santobrite is chemically stable, non-corrosive to metals, non-volatile and practically odorless. It may be applied without the use of expensive apparatus and, when properly handled, its use is not hazardous to mill workers or to consumers of the mill's products.

For complete information on Santobrite and its application in the pulp and paper industry, send for our new file-size bulletin "Santobrite for Microorganism Control in the Pulp and Paper Industry." The coupon is for your convenience. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, San Francisco, Seattle, Montreal, Toronto.

MONSANTO CHEMICALS
SERVING INDUSTRY...WHICH SERVES MANKIND

MAIL COUPON FOR NEW TECHNICAL BULLETIN

Monsanto Chemical Company,
Organic Chemicals Division,
1700 South Second Street, St. Louis 4, Missouri

Please send your new Technical Bulletin No. O-5 "Santobrite for Microorganism Control in the Pulp and Paper Industry."

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Company.....

Street.....

City.....Zone.....State.....

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

B. W. Scribner to Receive TAPPI Medal

The executive committee of the Technical Association of the Pulp and Paper Industry has voted unanimously to present the 1945 gold medal of the Association to Bourdon W. Scribner, Chief of the Paper Section of the National Bureau of Standards, Washington, D. C.

The TAPPI Medal is given to an individual who has made an outstanding contribution to the technical advancement of the pulp and paper industry. There have been twelve previous recipients, namely, William H. Mason (1928), Ogden Minton (1928), Ernst Mahler (1933), Edwin Sutermeister (1935), William H. Millspaugh (1936), Clarence J. West (1937), Carl B. Thorne (1938), J. Newell Stephenson (1939),

Bourdon W. Scribner

Otto Kress (1940), Robert B. Wolf (1942), Harry Fletcher (1943) and D. Clark Everest (1944).

Mr. Scribner was born in Ridgway, Pa., and received his B.S. in chemistry from Pennsylvania State College, following which he was with the West Virginia Pulp and Paper Company for 13 years, directing materials testing, control testing, testing of finished products, and research in pulp and papermaking. He assumed his present position as Chief of the Paper Section of the National Bureau of Standards in 1923. At the Bureau he has directed researches dealing with papermaking problems, improvement of offset printing, preservation of records, standardization of paper and paper testing methods, and development of paper testing procedures and instruments. He is the author of many technical papers dealing mainly with quality standards for paper products and the preservation of records.

The medalist became chairman of the Paper Testing Committee of the Technical Association of the Pulp and Paper Industry (TAPPI) in 1925, and initiated systematic development and adoption of testing standards by the Association. He is also a member of the TAPPI Standards Committee and the Optical Properties Committee. For many years he has been active in the development of Federal Government specifications for paper and paper products as Chairman of the Committee for Federal Specifications, and member of the Committee for Government Printing Office Specifications.

The aggressive pioneer work of Mr. Scribner and his associates in developing the basic testing methods for paper has done much to bring about the ever increasing quality of paper and paperboard manufactured by the industry and converted into useful paper products. The existence of these established and universally recognized testing methods has been a direct contribution to the war effort in their use in preparing the Army and Navy paper and packaging materials specifications since but little time or technical manpower had to be utilized during the present emergency by the Government procurement agencies in developing uniform acceptable test procedures.

The award of the TAPPI Medal will be made at the annual meeting of the Technical Association of the Pulp and Paper Industry on Thursday afternoon, February 22, 1945.

Kalamazoo Discusses Coating Adhesives

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry met at Kalamazoo, Mich., on December 7. Elbert G. Milham of the Waterliet Paper Company, Merle Wilkins of the Bryant Paper Company, W. A. Kirkpatrick of the Allied Paper Mills and Leo Willoughby presented a paper on Adhesives for Coated Paper.

In summarizing their remarks the speakers indicated that casein will probably continue to be the standard adhesive for highest quality coats. The use of starch will continue to increase in the lower grade fields. There will be improvements and starch may even succeed in invading the high grade field. Soy protein and soy flour may be expected to find more extensive use. The polyvinyls will probably become a factor in the specialty field. There will be further development of water in oil emulsions after the war. The field for coated papers is due for expansion and the question of suitable adhesives need continued study.

TAPPI Survey of Water Technology, 1943*

By Lewis B. Miller[1]

The survey of water technology by the Water Committee of the Technical Association of the Pulp and Paper Industry indicates in a broad way, progress in the field of water technology during 1943. The subject of potable water has in general been avoided except where it overlaps the field of industrial water. The references cited are chosen as being a representative cross section of the best articles published in 1943. In general, preference has been given in the reference list to articles published in well-known and widely read American technical and scientific publications, and in some of the best known and still available foreign periodicals. Emphasis has been placed upon phases of the subject which represent new developments, in which outstanding progress has been made or which particularly apply to the pulp and paper industry.

The activities and progress in the field of water technology in the Technical Association of the Pulp and Paper Industry is given in the annual report of the committee.[2]

A—Water in War Production Program

The subject of the maintenance of water supply during a bombing attack received a great deal of consideration during 1942. Likewise the protection of water treatment plants against bombing and against sabotage was extensively discussed during 1942. With decrease in the danger of bombing in this country and with active measures in force to protect against sabotage these subjects have received less emphasis in 1943; the problems of conserving water, preventing wastage, and of meeting the greatly increased water requirements of war time production have held the center of the stage in the technical literature dealing with water in the war production program. Plans to be placed in effect with the advent of peace are receiving increasing consideration. The annual conference of the 4 States Section of the American Water Works Association dealt extensively with these subjects *(A-1)*.

Should poison gas warfare and especially the use of gas bombs in attacks on cities be made use of there is serious danger of water contamination. A testing equipment has been devised for determining the war gas being used *(A-2)*.

A discussion of the excellent results obtained in the well-planned water waste control program of Philadelphia is presented by McLaughlin *(A-3)*. A brief summary of wastage disclosed by a water survey (with this survey approximately half completed) will be instructive; following are data on actual savings effected:

500	Line service leaks	3,909,000 g.p.d.
356	Abandoned service leaks	5,058,000 g.p.d.
63	Joint leaks	2,125,000 g.p.d.
54	Broken mains	6,139,000 g.p.d.
40	Slow meters	3,609,000 g.p.d.
15	Miscellaneous leaks	333,000 g.p.d.
3	Cases of unauthorized use	647,000 g.p.d.

Total savings in gallons per day is 21,820,000. This is sufficient water to supply the normal needs of a city of 200,000 people. Large additional savings of water were made through a publicity campaign to the citizens of the city. These results are indicative of what can be accomplished in the municipal field. In his own experience as a consultant in the fields of water, sewage, and industrial wastes the writer can vouch that among industrial users water savings of less gallonage but of greater percentage of total use are frequently made in the course of water surveys of individual manufacturing plants. In the January, 1943, issue of the Journal of the American Water Works Association 15 papers are published dealing with water in the war program *(A-4)*. In the abstracts of water works literature contained in the January and July, 1943, issues of the J.A.W.W.A. are abstracted 34 articles on this subject *(A-5, A-6)*.

A survey of water usage at Allentown, Pa., permitted the elimination of underground leakage totalling 3 m.g.d. and made it possible to defer construction of new supply facilities despite increased war demands *(A-7)*.

Some of the problems of water supply for troops are discussed by Hinman *(A-8)* and Diamond *(A-9)*.

Literature Cited

A-1 Annual Conference, 4 States Section of the American Water Works Association in cooperation with the Pennsylvania Water Works Operators Association held at the Benjamin Franklin Hotel, Philadelphia, Pa., Oct. 14-16, 1943. Papers on these subjects included:
Incodel—The Delaware River Basin—a Home Rule Program for the Development and Conservation of Its Resources.
We Prepare for Peace (4 papers).
Stop Waste—a cooperative program sponsored by the Office of War Utilities directed at conserving water, power, fuel, maintenance supplies, and other critical items (5 papers).

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A-3 McLaughlin, M. J., Background of Philadelphia's present water waste control program. *Public Works* 74 (Oct., 1943), 20.

A-4 Journal of the American Water Works Association 35 (Jan., 1943), 1 to 92.

A-5 Abstract section, Journal of the American Water Works Association 35 (Jan., 1943), 105-112.

A-6 Abstract section, Journal of the American Water Works Association 35 (July, 1943), 940-948.

A-7 Schnabel, W. R., Water waste survey saves plant capacity. *Engineering News-Record* (Apr. 22, 1943), 71.

A-8 Hinman, Lt. Col. J. J., Some problems of water supply for troops. *Military Engineer* (Nov., 1943), 560.

A-9 Diamond, W. J., Water supply in North Africa. *Military Engineer* (Nov., 1943), 565.

B—Water—The Raw Material

One of the very interesting and still incompletely understood phenomena of water is known as the "Callao Painter." Quoting Dr. Mears of Stanford University *(B-1)*:

"At times, the inhabitants of Lima's seaport remark, in their native Spanish, that "the seawater is sick, for it stinks." Simultaneously, they experience distressing headaches, the silver in their houses tarnishes, and the old paint on their fishing craft inshore becomes discolored. This marine phenomenon, which has an established history, has received scant notice in scientific journals. Locally it is known as "aguaje," less frequently as "agua enferma." Leading Spanish dictionaries fail to define these expressions according to their local usage. The name most used internationally may be said to be the "Callao Painter," so-called after its marked distinction in blackening white

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* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

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[2] Miller, Lewis B., "TAPPI Water Committee Report, 1942." *Paper Trade J.* 116 (Jan. 14, 1943), 30. *Tech. Assoc. Papers* 26 (1943), 374.

and other light-colored boats in the Bay of Callao (lat. 12° S).

The manifestations are well known and fairly regular in occurrence. At undetermined intervals, but frequently during the Southern Hemisphere's summer and early fall, the Peruvian seacoast from approximately Paita (5° 05′ S) to Pisco (13° 43′ S) experiences a marked turbidity of the sea accompanied by the strong emission of hydrogen sulphide. Enormous quantities of dead plankton float about and line the shore. Guano birds die by the thousands. These striking transformations are normally associated with the invasion of warm water from the Equator into the cold Humboldt or Peru Coastal Current. Sudden and marked sea and land temperature changes are conspicuous; to many persons, these meteorological variations are a sufficient explanation. Yet the underlying reasons for the "Callao Painter" are still undetermined owing to the fragmentary physical and biological oceanographic data. The causes are likely to be found in more than one field of investigation carried on in this unique Pacific South American region."

One hypothesis for the explanation of this phenomenon is based upon the work of Johnson and Snook who, in their researches on the California coast, have noted that "an aftermath of extensive outbreaks of red water is the decay of inconceivable numbers of microscopic bodies stranded upon the beach, causing very offensive odors, and poisoning the water sufficiently to kill animals such as sea cucumbers, crabs, and sometimes even fish, with the result that their bodies wash ashore and increase the stench." Similarly, in the Humboldt Current area, there is abundant evidence that the marked temperature features alone are sufficient to account for the migration, impairment, or destruction of probably most cool water life.

To any of the readers who may be interested in studies of ocean water we wish to direct attention to the publications of the Scripps Institution of Oceanography of the University of California, located at La Jolla, Cal., and of the Carnegie Institution, Washington, D. C.

Pointing out the future possibilities of metal and mineral "mining" of ocean water and sediments when terrestial deposits have become exhausted, the Industrial Bulletin *(B-2)* in an article entitled "Biological Mining" discusses the chemical extraction of metallic magnesium and bromine from sea water and the possibility of future extraction of products such as manganese from deposits of pyrolusite on the ocean floor, probably laid down by prehistoric biological action, and of other constituents of the ocean by chemical means. A number of cases in which certain elements are extracted from water and concentrated by biological action are known, such as the concentration of opaline silica in the external skeletons of diatoms, calcium carbonate in oyster shells, strontium carbonate by certain radiolarians, vanadium by an ascidian and by a sea slug, iodine and potash in certain seaweeds, and arsenic in several crustaceans. The blue blood of lobsters and king crabs *(Limulus polyphemus)* is due to the presence of copper instead of iron (as in the blood of terrestial animals) and, strangely enough, organic copper salts in marine organisms are useful in treating pernicious anemia. Selenium is concentrated by certain western plants from the soil (via the soil solution) causing animal poisoning with symptoms known as "blind staggers." Certain pond plants concentrate radioactive mesothorium and plants which concentrate gold are used for prospecting purposes in western United States. Herein lies an almost untouched field of research for the botanist, biologist, and chemical engineer.

And for purely theoretical interest there is the research upon climatic cycles and cycles of varying rainfall which occurred thousands of years ago through the study of varves *(B-3)*.

From both an aesthetic and a practical view point snow fall is of importance. Church describes and explains the importance of perennial snow *(B-4)*.

Last year in the annual TAPPI survey *(B-5)* the writer called attention to the new book on Hydrology by Meinzer *(B-6)* but at that time had not had opportunity to study it in detail. Undoubtedly this is the outstanding modern treatise on the subject. Chapters are included upon precipitation, evaporation, snow and snow surveying, glaciers, lakes, infiltration, transpiration, soil moisture, ground water, runoff, droughts, physical changes produced by water (such as soil erosion, transportation of mineral matter, etc.) and the hydrology of limestone and lava-rock terraines. The comprehensiveness and thoroughness of this volume recommends it to anyone interested in any phases of hydrology as listed above. It is not a book to be read for entertainment except by the more studious minded.

For popular articles on the oceans, refer to a current issue of Life *(B-7)* and the Industrial Bulletin *(B-33)*.

The 1943 issue of Swimming Pool Data and Reference Annual presents the latest information on construction, design, maintenance, regulations of use, promotion of use, equipment, accessories, and supplies pertaining to swimming pools *(B-8)*.

Semipopular articles upon snow perils and avalanches *(B-9)* and upon precipitation variation in the United States *(B-10)* make interesting reading of a practical value to many Americans.

We take pleasure in calling attention to the excellent review of developments in sewerage and sewage treatment by Hyde and Rawn *(B-11)*.

Since all industries must furnish drinking water to their personnel it is well for them to know of the new Public Health Service Drinking Water Standards adopted Sept. 25, 1942. Special attention is directed to the minor constituents and their permissible limits since changes and additions have been made from the earlier standards *(B-12, B-18)*.

Recent investigations strongly suggest that the virus of the dreaded infantile paralysis or poliomyelitis may be water borne. Preliminary studies at Michigan University suggest that each unit of the water purification process will remove some of the virus but no unit will remove it completely. The concentration of the virus before treatment affects the amount remaining after treatment. These investigations are of primary importance since it has been repeatedly demonstrated that the virus is present in sewage polluted waters. Further investigations to determine effective methods for treating such water to destroy the virus are in order *(B-13)*.

The ionization constant and solubility of carbonic acid in water has been accurately determined *(B-14)*.

Smith has devised a weir in which flow is proportional to head *(B-15)*.

Collins has published a short résumé showing the general composition of natural waters in different parts of the United States *(B-16)*.

The Office of the Alien Property Custodian *(B-17)* is preparing to publish abstracts of the foreign owned U. S. chemical patents he has vested. Among these are patents on sanitary chemistry. Orders for such abstracts should be made to the Office of Alien Property Custodian, Chicago 3, Illinois, and will be available beginning January, 1944.

The importance of ground water supplies, their use and conservation, is gradually coming to be appreciated. With increase in population and the number of industrial users, it may be necessary eventually to effect control of ground water usage through appropriate legislation. Such legislation should be based upon sound technical information. Detailed information concerning ground water is at present not available except in isolated cases. It is encouraging to observe an increased number of investigations being made in this field *(B-19, B-20, B-21, B-22)*.

Structural requirements for sanitary wells are discussed in detail *(B-23)*.

Where wells near the sea shore are overpumped sea water frequently enters. This may be the case even at some distance from the sea, particularly in a low coastal plain. Sometimes the sea water is considerably modified due to base exchange with soil minerals, sulphate reduction, substitution of bicarbonate for stronger acid radicals, precipitation, etc. Revelle concludes that intrusion of sea water is most reliably determined by an increase in the chloride-bicarbonate ratio *(B-24)*.

The American Society of Civil Engineers is actively pursuing investigations in hydrology as evidenced by recent programs and publications of this society (*B-25—B-32* incl.).

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B-33 The world of water. *Industrial Bulletin* No. 194 (Nov., 1943), Published by Arthur D. Little, Inc., Cambridge, Mass.

C—Process Water for Industry

Within the Technical Association of the Pulp and Paper Industry the TAPPI Water Committee has continued its investigations of process water.

At the annual meeting in New York City in February, 1943, the Water Session dealt with various phases of this subject. Three papers dealt with pulp washing and three others with individual subjects of importance to water usage in pulp and paper manufacture. In detail the program was as folows:

1. Improvements in Continuous Multistage Washing—J. P. Rich and J. H. Noble.
2. Efficient Reuse of Process Water for Pulp Washing—H. A. Morrison.
3. Metaphosphate Increases the Efficiency of Washing Chemical Pulps—E. R. Lang and E. T. Laurin.
4. Paper Mill Operating Experience with Accelator Softeners and Clarifiers—A. C. Embshoff.
5. Conservation in and by Chlorination—R. B. Martin.
6. The Application and Maintenance of Pumping Equipment Associated with Water Treatment—A. T. Nielson.

TAPPI Standard T620m entitled "Analysis of Industrial Process Water," which was completely revised and rewritten last year, has been accepted after minor changes by the Standards Committee and has now been published as a TAPPI Tentative Standard. The work of revision has been in the hands of Miss L. E. McGrath who is primarily responsible for a fine job of collecting and evaluating rapid methods of water analysis for this standard.

Data collected from the industry regarding the "Quality of Process Water Required for the Manufacture of Fine Papers" has been published as TAPPI Special Report No. 333. A short résumé of this report will soon be published in Paper Trade Journal. A TAPPI Standard is also being prepared by the Water Committee on this subject.

The Water Committee makes a special effort to prepare a comprehensive annual development report setting forth progress in the field of water during the current year. The annual report for 1942, comprising 10 pages of the Journal and with 266 references, was published in the Paper Trade Journal for April 22, 1943, pages 25-34 and in the Technical Association Papers for 1942, pages 99-108.

We are informed that approximately 3,000 copies of TAPPI Monograph No. 1 entitled "Industrial Water for Pulp, Paper and Paperboard Manufacture" have been distributed to date. This monograph was prepared by the Water Committee and published in 1942. The distribution of this number of copies of the monograph testifies to the growing interest in

the field of water technology within the pulp and paper industry.

A Water Conservation Session was sponsored at the fall meeting of TAPPI in Boston a year ago and several fine papers were presented there.

An excellent paper from the Forest Products Laboratory presents the results of a comprehensive investigation upon the effect of iron in bleaching wood pulp. Briefly it was found that even small quantities of iron present in the process water used in bleaching and washing pulp are adsorbed almost completely by the pulp with resultant discoloration *(C-1)*.

Cooling waters are becoming more and more important as industrial process waters. Such industries as the distillation industry, petroleum, etc. have long used large quantities of cooling water. With the increase in alcohol manufacture, synthetic rubber manufacture, and other wartime industries and with the increased usage of air conditioning the problems associated with cooling waters are receiving increasing consideration. In general, three undesirable conditions may arise in connection with cooling water usage, namely (1) corrosion, (2) scale formation and (3) the development of biological growths. Recirculating systems are far more economical of water than once-through cooling systems but are more apt to develop trouble. By appropriate intelligent treatment and control of cooling waters these three undesirable conditions may be eliminated, or at least minimized.

Boroff and his associates *(C-2)* discuss process water for grain alcohol distilleries.

Murdock *(C-3)* describes a new reagent for controlling slimes in paper manufacture sold under the trade name "Merfenelopes." It is said to consist of a blend of phenyl mercuric borate, nitrate and picrate. The quantities required are said to be so small that it can safely be used in the manufacture of food packaging papers.

The effect of the pH of process water in pulp bleaching has recently been investigated. A pH of 8 to 9 appeared preferable to either higher or lower values; the original paper should be consulted for details *(C-4)*.

In the manufacture of artificial ice carbonation of water low in total solids reduces the cracking that sometimes occurs upon freezing *(C-5)*.

A general discussion of process water for industry is presented in Chemical and Metallurgical Engineering *(C-6)*.

Leverin presents a report of the quality of water available in the large lakes and rivers of central Canada *(C-7)*.

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D—Water Treatment

In the writer's opinion the outstanding contribution of the year to the subject of water treatment is the "Water Conditioning Handbook" prepared and published by the Permutit Company *(D-1)*. This book consists of 22 chapters and describes in detail the various processes of water treatment, equipment required, chemical reactions involved, costs of treatment and methods of calculating costs. Blueprints of typical layouts of equipment are included. An outstanding accomplishment found in chapter 22 is the tables presenting data upon solubilities, type and capacity of shipping container, loose weight, and storage space requirements of the chemicals commonly used in water treatment. The writer speaks feelingly regarding these tables for he was engaged in preparing identical tables for water treatment chemicals for the use of himself and his colleagues when publication of the Permutit handbook saved him further labor. The writer is aware of no other publication in which this complete information is available. It can only be obtained by extensive correspondence with a large number of chemical manufacturers. This represents but one example of the thoroughness and comprehensiveness of this volume. Our hats are off to the individuals of the Permutit Company technical staff who prepared this outstanding volume on water treatment.

An important development in water treatment, developed in recent years, but which has suddenly assumed considerable commercial importance within the past year or so, is the demineralizing process. In this process raw water is passed through a zeolite unit which replaces all metallic cations by hydrogen ion and then through a second zeolite unit which replaces all anions present by carbonate. The carbonic acid thus formed is removed by a degasification process, yielding a treated water which is substantially the equivalent of distilled water but at a comparatively low cost. The first zeolite unit is regenerated with acid; the second with sodium carbonate. A number of articles describing this process have been published during the current year.

A brief discussion of the process is found in the Catalyst *(D-2)*.

A detailed study of the rates of the cation exchange reaction has been made at the University of Wisconsin *(D-3)*.

A general description of the demineralizing process is presented by Tiger and Sussman *(D-4)*.

Myers discusses the chemical reactions involved and the possibilities of application in both aqueous and nonaqueous media *(D-5)*.

Nordell points out applications for this process *(D-6)*.

The use of carbonaceous zeolites for iron removal from water has been studied in some detail *(D-7)*. It was found that ferrous ion in water will replace sodium, calcium and magnesium from the zeolite. With waters of low to medium hardness, ferrous ion together with hardness is removed by passage through carbonaceous zeolite, the iron being reduced to 0 to 0.2 p.p.m. expressed as Fe.

A comparison of sand and processed anthracite coal as filter media has recently been published *(D-8)*.

O'Brien describes the use of a "chlorine blanket" at the bottom of the Baltimore reservoir to destroy algae located there and thus improve taste and odor. Chlorine of break-point concentration was fed to the influent of the reservoir to accomplish this result *(D-9)*.

McLaughlin presents an excellent paper describing

a pilot plant capable of handling 1,000,000 g.p.d. of Delaware River or Schuylkill River waters by ozonation. Bacteria were markedly reduced, as well as taste and odor. Manganese was removed. Flocculation was improved. This paper is worthy of careful study since it presents data upon a modern ozonation plant, well controlled and of sufficient size to make the results of practical significance.

Adams discusses the use of activated carbon for taste and odor control *(D-11)* and Johnson the use of carbon with chloramines for the same purpose *(D-12)*.

The hydration of pyro-, meta-, and tetraphosphates have been studied since their rates of hydration affect their usefulness in water treatment *(D-13)*.

Davis reports the removal of manganese and hardness by an up-flow greensand unit at flow rates as high as 20 gallons per square foot per second *(D-14)*.

Joos and Kemmer find that increasing the gauge pressure on a hot process lime-soda softener improves its performance by substantially reducing hardness with no increase in chemical feed *(D-15)*.

At the October, 1943, Water Conference of the Western Society of Engineers H. L. Boehner presented a paper entitled "Catalytic Lime-Soda Softening by the Spiractor." Experience indicates that best results are obtained with the Spiractor when (1) The hardness is predominantly calcium; (2) The temperatures are above 55° F.; (3) The turbidity of the raw water is less than 5 p.p.m.

The advantages of this process are (1) No power required; (2) No moving parts.

Constant flow operation is necessary. Hardness can be reduced to 17 p.p.m. This paper will be published subsequently.

Streeter presents the results of some exceedingly important and practical studies upon chlorination *(D-16)*. Free chlorine concentrations as low as 0.05 to 0.1 p.p.m. killed all coliform bacteria within 2 to 3 minutes. With chloramines of the same concentration 40 to 90 minutes were required to produce the same killing effect. To kill all bacteria within 2 to 3 minutes required chloramine concentrations of 2 to 3 p.p.m. Free chlorine is seen to be 20 to 30 times as effective as chloramines in destroying coliform organisms. Chlorine is more effective at low than at high pH values. Free chlorine can be determined (as differentiated from chloramines) by the para-aminodimethylaniline test developed by Moore. (For a reference to this test see Section E of this review, Reference *(E-17)*.

Recent research indicates that high chlorine residuals may be determined by a modification of the orthotolidine test, whereas the standard orthotolidine tests yield entirely erroneous results *(D-17)*. The modified method is recommended where new water mains are being heavily chlorinated and it is desired to know the residual chlorine present *(D-17)*.

Goetz *(D-18)* discusses the use of silver as a germicide. To be most effective the water must be brought in contact with silver in the "excited" state as by passing between silver electrodes across which an electrical potential has been established. Under this condition silver is exceedingly effective as a germicide; the germicidal effect lasts for weeks in treated, stored water. This appears to be a fertile field for further investigation.

Hann discusses the use of ozone for treatment of water and its effect upon disinfection, color removal, taste and odor removal, coagulation, and iron and manganese removal. He states that in a modern plant ozonation will cost from one to several dollars per million gallons *(D-19)*.

The Accelator as used for water clarification may also be used for color removal *(D-20)*.

Researches by Wattie and Chambers of the U. S. Public Health Service *(D-21)* indicate that excess lime treatment destroys bacteria less effectively than chlorine. The higher the pH of the treated water, the more rapid and effective is the bacterial destruction. Pathogenic bacteria are fortunately less resistant to germicides than non-pathogenic types. At pH values of 9.5 to 10.5 pathogens are not entirely destroyed in 6 hours. Two hours exposure at pH values of 11.0 to 11.5 and 4 hour exposure at pH values of 10.5 to 11.0 produce a 100% kill of pathogens.

McNamee *(D-22)* points out that water, considered as a basic raw material, exceeds any other commodity in volume of production. He calculates the following annual production for six basic commodities.

	Annual Production
Water (used in industry only)	5,000 million tons
Bituminous coal	500 million tons
Crude Petroleum	200 million tons
Iron ore	100 million tons
Steel	83 million tons
Pig iron	55 million tons

Oligodynamically active silver can be prepared on a carbon base *(D-23)*.

A series of ten articles on swimming pools and their treatment have been abstracted *(D-24)*.

A modified method of silica removal by magnesia is described by Tiger *(D-25)*.

In the monthly issues of the Betz Indicator *(D-26)* for the past two years there has appeared each month an article on "Unit Processes of Water Treatment." The eleven articles appearing in the 1942 edition were reviewed in our "TAPPI Review of Water Technology, 1942" *(B-5)*. During 1943 the following articles on this subject have been published:

January issue, "Hot Process Softening."
February issue, "Silica Removal—Hot Process."
March issue, "Silica Removal—Cold Process."
April issue, "Acid Treatment Before and After Zeolite."
May issue, "Deaeration."
June issue, "Recirculation of Boiler Water to Hot Process Softeners."
July issue, "Oil Removal."
August issue, "Recarbonation."
September issue, "Blowdown."
October issue, "Chemical Feed Systems."
November issue, "Cation Exchange by Hydrogen Zeolite."
December issue, "Slime and Algae Control."

This series of articles presents information on unit processes of water treatment which is technically accurate and thoroughly up-to-date, but written in a style which is readily understandable by the average reader.

The Permutit Company has developed a method of desalting seawater *(D-27)* so that shipwrecked sailors may, by dropping a few cubes of chemicals into a pint of sea water, in a few minutes have a drink of water of satisfying freshness. The required chemicals packed in a water proof container are easily carried in life boats, upon rubber life rafts, etc. This is a great advancement over the system of catching fish and pressing water fluids from their bodies by a simple press, fishing tackle and a press being carried on life rafts, etc. as standard equipment. It seems reasonable to assume that the chemically treated water is more palatable also. These methods will undoubtedly save many lives before peace is finally established.

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E—Water Analysis

Pertaining particularly to paper, a method of speck analysis has been developed for determining the nature and sources of specks of dirt appearing in pulp and paper *(E-1)*.

A sensitive bubbler to obtain speedy identification of war gases has been devised at Los Angeles *(E-2)*. Rieman has also devised a test for mustard gas *(E-3)*.

The Betz Water Handbook, published in 1942, has now entered its third printing. This handbook is divided into two parts; the first part describes simple, accurate, and rapid methods of water analysis; the second part discusses the interpretation of the analyses obtained *(E-4)*.

A method for determining an alkali carbonate quantitatively in the presence of bicarbonate has recently been published *(E-5)*.

Harlow has developed a staining reagent for determining cellulose fiber structure *(E-6)*.

A method of determining accurately small amounts of oil in boiler and feed waters has been developed *(E-7)*.

Hartman-Leddon Co. have added to their list of pH indicators, giving a total of over 100 indicators for various types of use. They also list a large number of stains and reagents for microscopic tests *(E-8)*. W. H. & L. D. Betz have developed several additional portable test kits for special water analyses *(E-9)*. A new fiber identification stain is described in a recent publication *(E-10)*. A simple method for the preparation of both temporary and permanent slides for microscopic study permits uniform dispersion of pigments and fillers used in paper manufacture *(E-11)*. An analytical tool which is becoming of greatly increased value is the mass spectrometer *(E-12)*. Holmes and Walker at the A. S. T. M. convention in 1943 presented a paper discussing the use of chemical analyses, microscopic examination, petrographic examination and x-ray analyses in determining the nature and compounds present in water deposits such as boiler scales, corrosion products, etc. *(E-13)*. A modified procedure for iron determination in water is based upon a colorimetric procedure *(E-14)*. The complete November, 1943, issue of the Analytical Edition of Industrial and Engineering Chemistry is taken up with a comprehensive article on the industrial applications of infrared spectroscopy *(E-15)*. This excellent article is being published in book form to include about 2,000 literature references *(E-16)*. A work of the greatest significance has been published during the past year which describes a simple and accurate method for specifically determining residual chlorine in water *(E-17)*. Whereas, the time-honored ortho-tolidine method will give a color reaction not only with residual chlorine but with the chloramines and certain other oxidizing agents found present in water and sewage as well, the Moore test is specific for residual chlorine only. The importance of this test in determining the effectiveness of chlorination in water treatment is pointed out by Streeter *(D-16; E-22)*. A modification of the ortho-tolidine reaction for the determinaion of high chlorine residuals has also been described recently *(E-18)*. Scott has developed a method for determining low phenol concentrations in water *(E-19)*. Hirsh has prepared a diagram to represent the pH of calcium carbonate equilibrium in water *(E-20)*. Control of chlorination is the subject of a committee report *(E-21)*.

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F—Corrosion

The general subject of corrosion is discussed in the last paper written by the late and much beloved Robert Spurr Weston, Consulting Engineer *(F-1)*. Corrosion prevention by vapor phase treatment in steam making units is one of the new developments in preventing corrosion of condensate return lines *(F-2)*. A committee report discusses the use of sodium hexametaphosphate in corrosion control *(F-3)*. A review and discussion of the theory of corrosion, in the presence of moisture, as applied to metals used in power plant practice is presented by Corey *(F-4)*. Corrosion by flue gases is discussed by Shnidman and Yeaw. The condensation of moisture and the presence of sulphur in amounts exceeding 2 grains per 100 cubic feet of gas are two important factors in such corrosion *(F-5)*. The fittings and machinery of the Lafayette (the former Normandie) were coated with a rust preventive as rapidly as water was lowered inside the hull. This treatment represents a new process in which a petroleum specialty, which has the property of penetrating water to spread over metal surfaces and thus protect them, is applied to the metal surfaces *(F-6)*. Galvanic corrosion is the subject of several bulletins of a metal manufacturer *(F-7)*. Evans presents a semipopular discussion on the distribution of corrosion of iron and zinc in salt solution *(F-8)*. Bacteria and its role in corrosion is the subject of a recent article *(F-9)*. Steel corrosion in condensate return lines is primarily conditioned by the amounts of oxygen and carbon dioxide present *(F-10)*.

The literature on corrosion is so extensive and so diversified that complete coverage of the subject is far beyond the limits of this review. The reader is referred to the various abstract journals for complete references. One section of water works abstracts is devoted to this subject *(F-11)*.

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G—Boiler Feed and Cooling Waters

At the annual meeting of the American Society for Testing Materials held last June in Pittsburgh a symposium consisting of three papers presented information on new methods of investigating boiler problems. Imhoff and Burkardt presented their results of an investigation of 22 power plant deposits by x-ray and analytical chemical means. These studies throw new light upon the actual compounds present in such deposits *(G-1), (G-5)*. Partridge *(G-2)* has again written in his inimitable style of that Limbo power station, which he has made famous, situate on the immediate borders of Hades, and of the water problems involved in that spot far removed from the pleasant gardens of the Hesperides. We refer you to the original article for full enjoyment. Holmes and Walker discussed the investigation of scales by methods, both old and new *(G-3)*.

Maguire presents a discussion of the present status of the embrittlement problem *(G-4)*. Boiler water of an embrittling nature can be detected by the so-called "Embrittlement Detector" and steps can then be taken to remedy the situation. Certain salts in boiler water accelerate embrittlement, other chemical compounds inhibit it.

DeWitt discusses the use of inhibitors in the acid descaling of boilers and practical methods of acid application *(G-6)*.

The determination of steam purity by electrical conductivity and its application in determining boiler operating conditions which are conducive to carry over form the subject of a recent article *(G-7)*. Water insoluble turbine deposits are removed by washing with dilute caustic *(G-8)*. Corrosion prevention in general is discussed and particular attention is drawn to the prevention of corrosion by vapor phase treatment in an article by Erb *(G-9)*.

In November, 1943, the fourth water conference of the Engineers' Society of Western Pennsylvania was held at Pittsburgh. Several phases of water treatment were discussed. The papers presented at this meeting will be published presently. Those interested should write to the general chairman *(G-10)*.

Elimination of carry over by means of changes in chemical feed, by mechanical changes, and by modification of firing methods offer solutions to this sometimes vexing problem *(G-11)*. The more common boiler-water problems and methods for their solution are discussed by Betz *(G-12)*.

A study has been made of boiler scale which formed in an experimental boiler operating at 800 pounds per square inch *(G-13)*. D. W. Haering & Company has reprinted in booklet form a set of short but pertinent articles prepared by the members of their staff *(G-14)*.

Tanzola presents a discussion of scale formation, corrosion and biological fouling in cooling waters, together with examples of the variations and complexities which may occur *(G-15)*. Thompson and Ryznar discuss the same subject *(G-16, G-17)*.

A general summary of boiler water treatment, both external and internal, appeared in the National Engineer *(G-18)*. The use of organic amines in steam systems has recently received considerable attention. These compounds are volatile and alkaline in reaction. They volatilize with the steam when fed into a boiler and thus enter the condensate to render it alkaline. In this way CO_2 corrosion is said to be eliminated and oxygen corrosion reduced. References to 24 articles on boilers, fuels, and feed water is found in the Abstract Section of the Journal of the American Water Works Association for February, 1943, pages 248 to 256.

A case is presented in which a hard calcium silicate boiler scale was eliminated by feeding sodium phosphate which converted the calcium ion present to an insoluble calcium phosphate sludge and left the silica in solution as soluble sodium silicate *(G-19)*. The The application of the Schroeder embrittlement detector for determining boiler waters of embrittling characteristics is the subject of three articles *(G-20, G-21, G-22)*.

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H—Industrial Waste Treatment

A section upon industrial waste treatment is a new departure in this review. Because of the great strides which are being made in the treatment of industrial and domestic wastes, both of which are applicable to the treatment of the varied types of industrial wastes, it is felt that this review would be incomplete without some reference to this field of activity. With the greatly increasing quantities and types of waste materials which have arisen as a byproduct of war production, the subject of industrial waste treatment is becoming an increasingly important one. The field is so broad that only a few of the more important phases can be touched upon here.

In two articles Mohlman considers the general subject of waste treatment and utilization of byproducts from domestic wastes *(H-1)* and from industrial wastes *(H-2)*. He points out some of the significant features of waste treatment in a war time world. Some utilization of byproducts from domestic waste treatment is possible. Digested sludge from domestic wastes has comparatively little value as a fertilizer, and may not warrant its preparation and sale as a commercial fertilizer, although locally its use is warranted in the air dried condition. Dried activated sludge is much higher in fertilizer value although not comparable in value with commercial mixed fertilizer. Use of the gas generated in sludge digestion for heat and power is well known. Salvage of grease from sewage is not economical. In Europe diluted sewage effluents are used for fish culture, such as carp. In the second article sanitary surveys of certain highly polluted streams and the significance of industrial wastes as a contributing factor to these streams are discussed. Methods of treatment for some of the major wastes and economies resulting therefrom are considered in detail.

Treatment of sulphite wastes from the pulp and paper industry has been the subject of much investigation and many patents. During 1943 a sulphite waste liquor pilot plant began operation at the Interlake Pulp and Paper Co. mill in Wisconsin. Treatment is by the trickling filter process *(H-3)*.

The manufacture of alcohol from waste sulphite liquors is reviewed by Hanson *(H-4)*. A lower grade pulp results when the system is operated to yield maximum alcohol. The process is used in Europe to some extent but probably cannot be economically operated in this country after the war (See also *H-32)*.

Screening of tannery waste has greatly reduced the load upon a municipal sewage disposal plant to which this waste was discharged *(H-5)*. Sulphuric acid is said to have been recovered from organic sludges by electrolysis *(H-6)*. The U. S. Public Health Service has investigated the nature of munitions manufacturing wastes and methods for their treatment, including the wastes from the manufacture of TNT and smokeless powder *(H-7)* and from the manufacture of small arms ammunition, tetryl, and nitroglycerine *(H-8)*. Rudolfs points out the advantage of two-step lime additions and pH control in sewage coagulation *(H-9)*.

Gifft presents an excellent and illuminating discussion of B.O.D. determinations and their interpretations *(H-10)*.

Under laboratory controlled conditions it was demonstrated that several varieties of fish thrived on diluted sulphite mill wastes. High concentrations of the waste were toxic to the fish *(H-11)*.

TNT wastes are found to show a considerable "oxygen consumed" value but no B.O.D. From this and other data it was deduced that this waste was not self-purifying when discharged to a stream. When present it interferes with biological methods of waste treatment.

Considerable information is to be found upon waste treatment in the various state publications such as the Biennial Reports of the Stream Control Commission of Michigan and the Annual Reports of the State Water Commission of Connecticut.

Industrial waste treatment and control is also discussed by Adams *(H-12)*.

The significance of mineral constituents which may be discharged to public waters is under investigation, particularly lead, zinc, copper, tin, silver, manganese, fluorine, etc. *(H-13)*. A differential solubility method has been developed for the treatment of pickle liquors from steel manufacture *(H-14)*. Acetone is superior to other solvents for promoting the crystallization of copperas from pickling liquors *(H-15)*. The Dorr Company has developed a process of vacuum flotation for sewage and industrial waste treatment *(H-16)*. Olin and his students describe recent investigations of the use of bentonite as a sewage and industrial waste coagulant *(H-17)*. Screening and supplemental chemical coagulation for cherry wastes (cannery wastes) has been found effective in permitting these wastes to be treated by a typical trickling filter system *(H-18)*. Oil refinery brines are stabilized by sodium hexametaphosphate before injection into subsurface formations *(H-19)*. Activated carbon has been used effectively in controlling phenolic tastes and

odors *(H-20)*. The water quality requirements for certain chemical manufacture is set forth by members of the Calco Chemical Company chemical department *(H-21)*. Various methods of lime usage for acid waste treatment are described in detail by Rudoffs *(H-22, H-24)*. Cerna summarizes well known methods of water treatment processes *(H-23)*. The operation of sewage treatment plants is described in a manual prepared by Public Works Magazine *(H-25)*. Graham describes the removal of highly toxic chromates from waste waters *(H-26)*, as well as an accurate and sensitive analytical method for chromate. Industrial water treatment as a distribution system hazard is considered by Calvert *(H-27)*. The effect of varying degrees of chlorination upon the B.O.D. of domestic sewage has yielded some interesting results *(H-28)*. Reference should be made to the original article which does not lend itself to brief abstracting. Straub finds that paper pulp can be digested satisfactorily with domestic sewage sludge *(H-29)*. The increased production of dehydrated foods provides new waste problems *(H-30)*. A critical review of the literature on sewage and waste treatment for 1942 has been prepared by a committee under the chairmanship of Rudolfs *(H-31)*.

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H-31 Rudolfs, W., et al., A critical review of the literature of 1942 on sewage and waste treatment and stream pollution. *Sewage Works J.* 15 (Mar., 1943), 197.
H-32 Callaham, J. R., From waste liquors to war alcohol. *Chem. & Met. Eng.* 50 (Dec., 1943), 104.

I—Bacteriology and Biochemistry

Like the sections on Corrosion and Industrial Waste Treatment, this section covers so large a field that only a few pertinent and typical references may be cited. That this is true is obvious when it is considered that in its broader aspects this section might be considered to cover the fields of biochemistry in all its numerous ramifications, bacteriology, microbiology, and enzymology. A few references only, which are more or less applicable to the paper field or of general interest, are given. Holmes discusses the use of phenolic derivitives which are extensively used in slime control *(I-1)*.

In previous reviews by the TAPPI Water committee brief reference has been made to the effect of fluorine on dental cavities. Recent investigation indicates that fluorine (as fluorides) in potable water in excess of 1.0 p.p.m. tends to cause mottled enamel but that the presence of fluorine in concentrations varying between about 0.5 to 1.0 is highly beneficial to proper tooth development and health. Much work remains to be done on this subject. *(I-2, I-16-I-19,* inclusive)

The use of Brilliant Green Bile media has been found most satisfactory for confirming the coliform group of bacteria, according to the U. S. Public Health Service *(I-3)*. Practices observed in making agar plate counts in milk laboratories have been surveyed by Black *(I-4)*.

Antifouling paints have been investigated for prevention of marine attack *(I-5)*.

The control of algal growth through "blackout" with activated carbon is reviewed by Harris *(I-6, I-7)*. Myers discusses a reduction in water hardness caused by an aquatic plant and an inhibiting effect upon algal growth due to removal of hardness by this plant *(I-8)*. The use of sodium silicate coatings on paper to control biological growths is summarized *(I-9)*. An excellent general review of the use of fungicides and germicides in pulp and paper has recently been prepared *(I-10)*.

The nature of enzyme conversions and their control to yield products of specific qualities is the subject of a recent paper *(I-11)*. A highly important investigation demonstrates that bacteria can be acclimatized to grow in the presence of concentrations of disinfectants which are normally lethal. Continuous exposure to the disinfectant appears necessary in order for the organisms to acquire and maintain the acclimatization. Remarkable changes in the size of the organisms were noted as acclimatization was acquired. The implications of this work may be of profound significance in the use of disinfectants in pulp and paper manufacture *(I-12)*. Current literature upon bacteria *(I-13, I-14)* and algae *(I-15)* is abstracted in the abstract section of the Journal of the American Water Works Association to which the reader is referred.

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I-9 Refer to Silicate P's and Q's, Vol. 23 (June, 1943). Published by Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa.
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J—Equipment

As in 1942 the tendency during 1943 has been not to develop new and better equipment but to produce sufficient equipment to meet the vastly accelerated equipment requirements for the war program of production. Changes in equipment design have been characterized by the substitution of noncritical materials or less critical materials for those which are highly critical in the war effort. This section will, therefore, obviously be brief.

During the past year or two plastic piping has come to the fore as a replacement for metal pipe. Some types are highly resistant to corrosion and chemical solutions, and are thus capable of replacing the more costly types of metal piping where such resistance is a requirement *(J-1, J-2)*.

A dust preventing mechanism has been devised for handling activated carbon *(J-3)*.

Several new developments in Milton Roy chemical feed pumps deserve consideration, as follows:

1. By electronic methods, motor speed of the pump is automatically controlled to vary the volume of chemical feed delivered by means of variations in
   a. rate of flow; b. pH; c. conductivity; 4. pressure; e. temperature and f. liquid level.
2. The length of stroke of the pump is varied by a positioning motor in proportion to the same variables listed above.
3. An enlarged "triplex" chemical pump, powered by motors up to 20 h.p., will feed chemical solutions in volumes up to 25 g.p.m. and against pressures up to 20,000 pound gage *(J-4)*.

Proportioning equipment has been expanded by one company to include sampling and proportion arrangements utilizing both chemical pump design and displacement type feeders *(J-5)*.

With their usual excellence, the staff of "Chem. & Met." has prepared and brought together a symposium on "Measurement and Control of Process Variables." This group of ten articles includes an excellent discussion of the equipment required and available for meeting these variable conditions. The articles have been prepared by leading experts in the subdivisions of this field *(J-6)*.

A new type of filter and purifier has been developed consisting of layers of an impregnated and creped paper cut in the form of rings. The rings are piled in layers to form a hollow cylinder which acts as the filter. Unusual results are obtainable at low cost *(J-7)*.

A new and simple Oliver diaphragm slurry pump is capable of lifting heavy slurries up to 20 feet by suction *(J-8)*. It will pump abrasive materials without wear or clogging, it is claimed.

Loss of head in passing through valves has been intensively studied by Lansford *(J-9)*. Stuffing box problems in acid pumping is discussed by Pratt *(J-10)*. In these days of equipment scarcity, pump maintenance becomes an important subject *(J-11)*. Nash has developed a glass centrifugal pump for handling hot corrosive acids or brine chilled liquids *(J-12)*.

Double check valve performance in cross connections is reported upon by Almquist *(J-13)*. Equipment maintenance in war-time is of more than casual interest *(J-14)*. The Cambridge Instrument Company has a new and accurate recorder for dissolved oxygen and another for dissolved hydrogen *(J-15)*.

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J-8 Oliver diaphragm slurry pump. Oliver-United Filters, Inc., 33 West 42nd St., New York City.
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K—Recent Books on Water and Related Subjects

Recent books on water and related subjects are many and varied. The one most closely related to the pulp and paper industry is the monograph entitled, "Industrial Water for Pulp, Paper and Paperboard Manufacture" published during 1942 by the Technical Association of the Pulp and Paper Industry. The important ones which have come to the attention of the reviewer are listed in the bibliography which follows.

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TAPPI Notes

The Hudson Valley Group of the TAPPI Empire State Section will meet at the Queensbury Hotel, Glens Falls, N. Y. on December 22. Edwin C. Jahn of the New York State College of Forestry will discuss some of his Scandinavian industry observations.

David M. Shapleigh, formerly of the Brown Company is now with Paper and Industrial Appliances, Inc., 122 E. 42nd street, New York, N. Y.

O. E. S. Hedbring, formerly of the Continental Paper Company is now resident engineer for the Ohio Boxboard Company, Rittman, Ohio.

Hamilton Moran, formerly of the Arvey Corporation is now development engineer for the Waxide Paper Company, 4410 Hunt Ave., St. Louis, Mo.

Milton D. Schreiber, formerly of the St. Regis Paper Company is now research and development engineer for Paper and Industrial Appliances Inc., New York, N. Y.

A member of TAPPI has a complete file of PAPER TRADE JOURNALS from 1932 to date which he will sell to anyone interested.

The Reynolds Metals Company film "A Recital of Faith" will be shown at the Boston Statler at 5:30 p. m., preceding the December 15th meeting of the TAPPI New England Section. This film relates to the wartime production of aluminum.

Correction: In TAPPI Standard T 220 m-43 it should be stated that the paper sheets should be conditioned according to method T 402 m instead of T 403 m. (paragraph 1, line 7).

Change: In TAPPI Standard T 407 m-42, Amount of Coating on Mineral Coated Paper, the statement regarding the preparation of Dogma D. L. recommending for removing coating from paper should be deleted since this product is no longer manufactured. However, a material known as RH ozyme D 200, made by the same company (Rohm & Haas Company) has been tested by the TAPPI Paper Testing Committee and has been found to be satisfactory for this purpose.

To Hold Joint Meeting at Kalamazoo

The Michigan Division of the American Pulp and Paper Mill Superintendents Association and the Technical Association of the Pulp and Paper Industry, will hold their annual joint meeting Thursday night, January 11, at the Park American Hotel, Kalamazoo, Mich. Details of this meeting will be announced later.

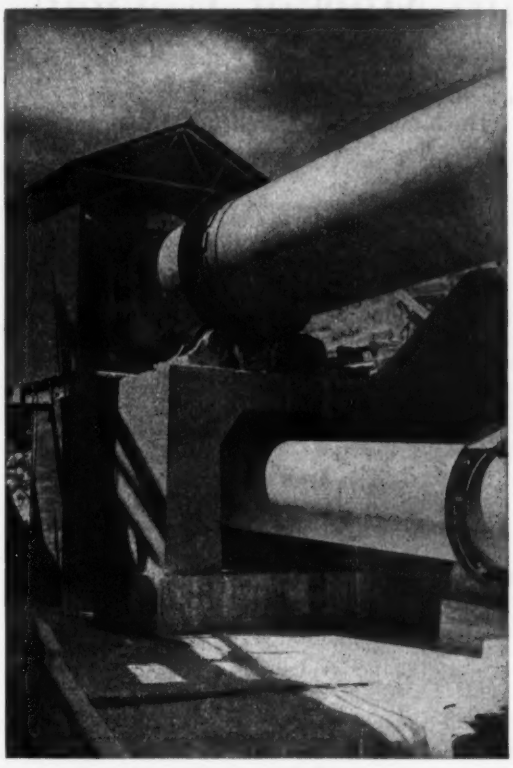
The Northwest Division is cooperating by holding its Winter meetings a week later than it had originally planned. This will also accommodate some of the members attending the Michigan meeting to travel on through to the Northwest meeting.

The Northwest Division Winter meetings will be held as follows: January 15, North Land Hotel, Green Bay, Wis.; January 16, Wausaw Hotel, Wausaw, Wis.; January 18, Port Arthur, Ont., Canada; January 19, Solem Hotel, Cloquet, Minn.

Chambers Technical Dictionary

The Macmillan Company has just issued a revised edition of Chambers Technical Dictionery, edited by C. F. Tweeney and L. E. C. Hughes. It is comprised of 975 pages of terms used in pure and applied science, medicine, manufacturing industries, engineering, construction and the mechanic trades.

It may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd street, New York, N. Y., at $6.00 per copy.



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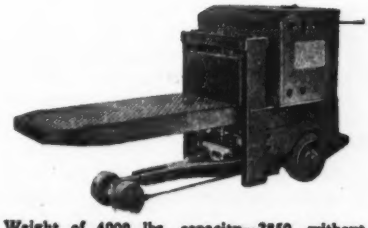
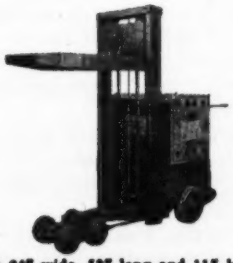
Capacity 2000 lbs. on forks 30" long. Truck turns from a 5' aisle into an intersecting aisle of 5'.



Weight of 4000 lbs. capacity—2850, without battery. Truck turns from a 5' 4" aisle into an intersecting aisle of 4'.



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New York Paper and Pulp Market Review

Book, Wrapping and Bag Paper Supply Continues Tight—Wood Pulp Supply Is Critical — No Change In Newsprint Inventory Ceilings Now — Waste Paper Collections Rise In November.

Office of the PAPER TRADE JOURNAL,
Wednesday, December 13, 1944.

Some major paper items are reported in very tight supply this week. Wrapping and bag papers, book paper, and paper board are in inadequate supply for civilian use. Reports from a relatively large number of manufacturers' representatives, jobbers, and general paper merchants, currently comment on the scant supply of paper for printing—particularly book and publication paper. This comment, which takes into consideration the extraordinary heavy over-all requirements of the government, points out that too much tonnage of paper is being used for unimportant and even trivial civilian uses, in the publishing of books, pamphlets, etc. Unfortunately, the maintenance of a free press must include the incosequential as well as the important thoughts of men in the printed word. Only by severe and oppressive censorship can it be otherwise.

A shortage of print paper in the first quarter of 1945, is anticipated by the War Production Board. Everything possible is being done, the report goes on to say, to insure paper production and conservation. Paper inventories are low and if the demand becomes too greatly out of balance, the alternative will be to reduce usage—if the shortage was about 100,000 tons, a 5% additional cut might be imposed on all printers and publishers. This would mean an order limiting commercial printers to 70% of their use of paper in the base period of 1941.

No change in the newsprint inventory ceilings established by Order L-240, will be made at this time the WPB states. The maximum supply is based on the average daily rate of allowable consumption for the first six months of 1941.

The index of general business activity for the week ended December 2 rose to 144.5, from 143.7 in the previous week, compared with 148.7 for the corresponding week last year. The index of paper board production was 159.0, compared with 167.7 for the preceding week, and with 154.0 for the corresponding week in 1943.

Paper production for the week ended December 2 was estimated at 92.2%, compared with 92.2% for 1943, with 82.0% for 1942, with 102.0% for 1941, and with 78.0% for the corresponding week for 1940.

Paper board production for the week ended December 2 was 94.0%, compared with 95.0% for 1943; with 82.0% for 1942, with 102% for 1941, and with 78.0% for the corresponding week for 1940.

Use of petroleum wax in the production of waxed papers was widened by amendment to Conservation Order M-351, which removed former restrictions, but still prohibits use of waxed paper for wrapping or packaging certain specified products.

Wood Pulp

The wood pulp supply situation continues to be reported as very tight. The WPB states that it is hoped that the domestic production of pulp will be approximately the same in the first quarter of 1945 as that of the fourth quarter of this year. However, the report states, the total pulp available to this country's boxmaking industries will be reduced as a result of the curtailment in pulp exports from Canada, which usually amounts to about 25,000 tons a quarter.

Rags

Demand for new cotton cuttings is active. Mill buying is quite heavy, particularly in white shirt cuttings and in khaki. Prices in all grades are firm and maintained at ceiling levels.

Old whites are reported in good demand. Buying of blues is light. Roofing mill buying continues narrow and relatively light in volume, but prices are firm.

Old Rope and Bagging

Demand for major grades of old rope is steady and Manila fiber continues in urgent mill demand for the production of strong, essential papers.

Scrap bagging continues slow in the metropolitan market. Prices are soft and continue nominal.

Old Waste Paper

A report of the Salvage Division of the WPB states that the Boy Scout collection campaign recently ended, aggregated 100,000 tons in two months. Total collections of waste paper for November amounted to 604,000 tons, or about 60% of the amount of paper stock estimated as collectable.

Twine

Demand is good for most grades of twine. Prices are firm and no change in the supply situation has been reported this week. The easing of istle use, in a WPB order of last month, promises some relief in the future.

Lieut. MacNaughton Promoted

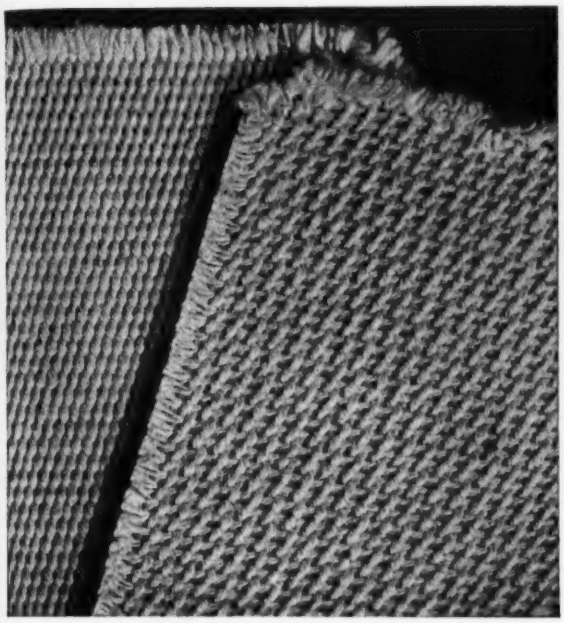
2nd Lieut. Peter L. MacNaughton, second son of W. G. MacNaughton, News Print Service Bureau, New York, has been notified of his promotion to first lieutenant.

After graduation as pilot in March 1943 from Marianna, Fla., Lieut. MacNaughton was on domestic ferry service in the Air Transport Command until December, when he was transferred to Waco (Texas) Army Air Field as instructor in aviation, later acting as assistant engineering officer.

At present Lieut. MacNaughton is in McCloskey General Hospital, Temple, Texas, recovering from injuries sustained in an air craft accident September 20, 1944.

Previous to enlisting from Panama City, Fla., where he was employed by International Paper Company, he had attended Bates College, Lewiston, Maine.

BRANDON DRYER FELTS



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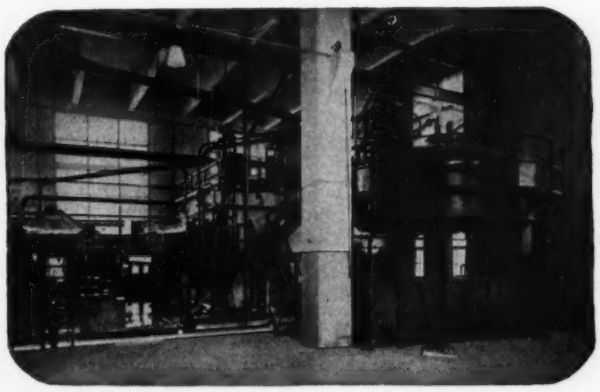

Adka installation, showing connections with paper machine.

Adka Saveall Improves White Water Systems; Offers Low-Cost Operation Maintenance

The Adka Saveall is the equipment used in a method of White Water Saveall differing from the screen, sedimentation and filter methods. As supplied by The Dorr Company, and installed under the supervision of Dorr engineers specializing in paper industry processes, Adka's growing American use indicates interesting possibilities for an increasing number of mills.

It clarifies white water to 0.2 lbs. per 1000 gals. on average, yielding recoveries ranging up to 95-99% according to the initial concentration of solids. It returns stock direct to paper machine without causing variations in the basic weight of the sheet. It eliminates fibre-weakening re-treatments in beaters and jordans.

Blueprint Now! FOR TOMORROW'S NEEDS

● The Adka Saveall may be furnished complete, ready for installation with all auxiliaries including necessary piping, pump, motors, etc. Consult a Dorr engineer regarding the applicability of this yield-producing method and practically-designed paper mill equipment.

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6552

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, December 13, 1944.

BLANC FIXE—Prices on blanc fixe continue to conform to prevailing levels. Demand is reported fair. The pulp is quoted at $40 per ton, in barrels, at works. The powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—All-over demand is reported heavy. Production is high and supply and demand is reported well balanced. Quotations are unchanged. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound f.o.b. shipping point.

CAUSTIC SODA—Demand very heavy. Production heavy, but under demand. Market reported tight. Prices unchanged. The flake form is currently scarce. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CHINA CLAY—Current demand is reported moderate on many grades of china clay. Quotations unchanged. Domestic filler clay is quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Military and all essential requirements heavy with market reported tight this week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—The rosin market reports prices unchanged on some grades this week. "G" gum rosin is currently quoted at $5.79 per 100 pounds, in barrels, at Savannah. "FF" rosin is currently quoted at $5.75 per 100 pounds, in barrels, at New York. Seventy per cent gum rosin size is currently quoted at $6.06 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake continue to be reported unchanged. Demand fair during the current week. Domestic salt cake is currently quoted at $15 per ton, in bulk. Chrome cake is currently quoted at $16 per ton. All quoted prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand for soda ash is reported to absorb current production. Bagged lots delayed by lack of labor. Prices continue to conform to prevailing levels. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Corn market firm. Shipments under last year, but relatively high. Demand continues heavy. Prices unchanged on starch. Pearl is quoted at $3.72 per 100 pounds. Powdered starch is quoted at $3.83 per 100 pounds. All prices in bags, car lots f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand good. Supply situation is reported satisfactory for the week. Prices of the commercial grades are currently quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.85 per 100 pounds. All prices in bags, car lots, f.o.b. works.

SULPHUR—Current consumption of sulphur continues heavy. Market situation unchanged. The quotation on annual contracts continues at $16 per long ton, f.o.b. mines. The current price on contracts at Gulf Ports is $17.50 per long ton.

TALC—Demand reported good. Domestic grades are currently quoted at from $16 to $21 per ton at works.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract...	*$58.00	@	—
Sheets	66.00	"	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping...	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag.....	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1.....	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½....	1.00	"	—
White No. 2.....	.90	"	—
Anti-Tarnish M.F..	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet....	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.....	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute.....	11.25	@	—
No. 1 Manila Wrapping, 35 lb...	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.....	5.75	"	6.00
Boards, per ton—			
News .....*	48.00	@	—
Chip .....*	48.00	"	—
Sgl. Mla. Lt. Chip*	60.00	"	—
White Pat. Coated*	75.00	"	—
Kraft Liners 50 lb.*	63.00	"	—
Binders Boards...	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10	@ $46.00	$40.25	@ $47.25
100% Rag	32.20 "	37.75	33.35 "	39.25
85% Rag	.... "	....	29.90 "	35.00
75% Rag	23.00 "	27.00	24.15 "	28.25
65% Rag	.... "	....	22.80 "	27.75
50% Rag	18.70 "	22.75	19.90 "	24.25
25% Rag	16.40 "	20.00	17.55 "	21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1..	$10.55	@ $12.75	$11.70	@ $14.25
No. 2..	9.65 "	11.75	10.80 "	13.25
No. 3..	9.20 "	11.25	10.35 "	12.50
No. 4..	8.90 "	10.75	10.05 "	12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated...	$13.65	@	$15.50
No. 2 Glossy Coated...	12.40	"	14.00
No. 3 Glossy Coated...	11.60	"	13.25
No. 4 Glossy Coated ..	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.....	9.35	"	10.75
A Grade S. & S. C...	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C...	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite.....	$86.00
Unbl. Softwood Sulphite.....	74.00
Bl. Hardwood Sulphite.....	83.50
Unbl. Hardwood Sulphite.....	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich ..72.00 @	82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate...	82.00
S. Semi Bleached Sulphate...	75.00
N. Unbl. Sulphate.....	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	72.00
Unbl. Soda	68.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area).....	10.50
West Coast (out area).....	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area).....	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1..	6.50	@	7.25*
Silesias No. 1.....	—	"	5.75*
New Unbleached...	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki			
Cuttings	—	"	3.50*

* OPA Maximum Prices.

How to Get Better Process Water

You Get CLEANER WATER And DEPENDABLE SERVICE With NORWOOD FILTERS

The Norwood Filters at Fox River's Telulah Mill were installed nearly a quarter of a century ago. Still giving dependable service.

You can depend on Norwood Filters to deliver cleaner process water . . . and to give you long, trouble-free service . . . because these good filters embody every modern advantage for better water processing. Norwood Filters remove all natural impurities. You get cleaner process water . . . you get a cleaner sheet, free from spots and specks. Investigate Norwood Filters today.

Plan Now For Reconversion

Be Ready to change back to peacetime production by planning now. Write for Norwood Engineering Data Units on either Filters or Calenders. Send for them today.

The Norwood Engineering Company
17 No. Maple St., Florence, Mass.

Get a Good Start And a Good Finish With
NORWOOD
WATER FILTERS AND PAPER FINISHING MACHINERY

We Are Looking for Trouble

Sometimes small things make lots of trouble. Could your machinery be changed a little to save a lot of work? Write and tell us what we can do to help. Or a *Union* representative will be glad to call.

UNION MACHINE COMPANY
FITCHBURG, MASS.
(Associated with Union Screen Plate Company)

THE HERMANN CLAFLIN
CONTINUOUS BEATER & REFINER
FOR
ECONOMICAL STOCK PREPARATION

Numerous installations have proved its ability to improve quality and with a substantial saving in power.

Adaptable for refining knots and screenings. Continuous and closed systems.

The Hermann Claflin is built in two sizes at the present time. Large capacity No. 3 ready in near future.

Operated at Conventional Jordan R.P.M.

THE HERMANN MANUFACTURING CO.
Also M/g's. Sheet Making-Pulp Testing Apparatus
LANCASTER, OHIO

Old Rags

White, No. 1—
Repacked ..... *3.80 —
Miscellaneous .... *3.20 —
White, No. 2—
Repacked ..... *2.90 —
Miscellaneous .... *2.65 —
Third and Blues—
Repacked ..... *2.20 —
Miscellaneous .... *1.80 —
Roofing Rags—
No. 1 ..... *1.53 —
No. 2 ..... *1.43 —
No. 3 (bagging) .. *1.35 —
No. 4 ..... *1.35 —
No. 5A ..... *1.35 —
Old Manila Rope .. 5.75 —

OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings .. 2.25 @ 2.40
New Mixed Cuttings. 2.00 " 2.20
New Light Silesias .. 5.50 " 5.75
Light Flannelettes ... 5.50 " 5.75
New White Cuttings. 7.00 " 7.50
New Light Oxfords. 4.00 " 4.50
New Light Prints ... 3.00 " 3.25

Old Rags

No. 1 White Linens. 7.50 " 8.50
No. 2 White Linens. 6.50 " 7.50
No. 3 White Linens. 4.50 " —
No. 4 White Linens. 2.25 " 3.25
No. 1 White Cotton. 4.25 " 4.75
No. 2 White Cotton. 3.25 " 3.75
No. 3 White Cotton. 2.50 " 3.00
No. 4 White Cotton. 1.90 " 2.20
Extra Light Prints .. 2.00 " 2.40
Ord. Light Prints ... 1.75 " 2.15
Med. Light Prints ... 1.55 " 1.95
Dutch Blue Cottons. 2.25 " 2.50
French Blue Linens. 3.00 " —
Checks and Blues ... 3.00 " —
Linsey Garments .... 1.90 " 2.00
Dark Cottons ..... 1.50 " 1.60
Old Shopperies ..... 1.30 " 1.45
New Shopperies ..... 1.45 " 1.50
French Blues ..... 2.25 " 2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 4.25 @ 4.35
Wool Tares, light .... 4.25 " 4.50
Wool Tares heavy ... 4.50 " 5.00
Bright Bagging ..... 4.50 " 4.85
Manila Rope—
Foreign ..... — " —
Domestic ..... *5.75 " —
Jute Threads ..... 5.50 " —
No. 1 Sisal Strings .. *4.00 " —
Mixed Strings ..... 2.00 " —
* OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½ @ —
No. 1 Hard White Envelope Cuts .... 3.12½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Hard White Shavings, ruled ... 2.50 " —
Soft White Shavings, one cut ..... 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Mixed Groundwood Fly Leaf Shavings ..... .90 " —
Mixed Colored Shavings ..... .75 " —
Mixed Groundwood Colored Shavings .. .90 " —
Overissue Magazines ..... 1.67½" —
No. 1 Heavy Books & Magazines ..... 1.92½" —
Mixed Books ..... 1.10 " —
No. 1 White Ledger .. 2.30 " —
No. 2 Mixed Ledger, colored ..... 2.00 " —
New Manila Envelope Cuttings, one cut .. 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
Extra Manilas ..... 1.95 " —
Mixed Kraft, Env. & Bag Cuttings ..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
Triple Sorted, No. 1 Brown Soft Kraft. 2.50 " —
New 100% Kraft Corrugated Cuttings .. 2.25 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
New Jute Corrugated Cuttings ..... .90 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Box Board Cuttings. .72½" —
White Blank News .. 1.65 " —
Overissue News ..... 1.10 " —
No. 1 News ..... 1.00 " —
No. 1 Mixed Paper .. .95 " —
Old Corrugated Containers ..... .82½" —
Mill Wrappers ..... 1.10 " —

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—
India ..... .21 @ —
White Hemp ..... .21 " —
Fine Polished—
Fine India ..... .36 " —
Unpolished—
Box ..... .17½" —
Paper Makers ..... .17 " —
Tube Rope ..... .19 " —
Wall Paper ..... .20½" —
Wrapping ..... .21 " —
Soft Fiber Rope ... .19 " —
Cotton ..... .23 " —

(Hard Fiber)

Medium Java ..... .18 " —
Mex. Sisal ..... .16 " —
Manila ..... — " —

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—
New White No. 1 ..... .07¾
New White No. 2 ..... .05¾
Light Silesias ..... .05¾
Black Silesias, soft ..... .03¾
New Unbleached ..... .07½
Washable Prints ..... .04¼
Washable No. 1 ..... .03
Blue Overall ..... .05½
Cottons—According to grades—
Washable shredding ..... .01¾
Fancy Percales ..... .04¾
New Black Soft ..... .03¼
Khaki Cuttings—
Unbleachable Cotton Cuttings .03½
Bleachable Cotton Cuttings .. .04¼
Men's Corduroy ..... .03½
Ladies' Corduroy ..... .03
Cottonades ..... .03¾

Domestic Rags (Old)

White No. 1—Repacked ..... 3.80 " —
Miscellaneous No. 1. 3.20 " —
Miscellaneous No. 2. 2.65 " —
White No. 2—Repacked ..... 2.90 " —
Thirds and Blues—
Miscellaneous .... 1.80 " —
Repacked ..... 2.20 " —
Black Stockings—
(Export) .....Nominal
Roofing Stock—
Foreign No. 1....Nominal
Domestic No. 1... 1.55 " —
Domestic No. 2... 1.45 " —
Roofing Bagging.. 1.35 " —
Old Manila Rope... 5.75 " —

Bagging

(F. o. b. Phila.)

Gunny No. 1—
Foreign .....Nominal
Domestic ..... 3.00 " 3.50
No. 1 Clean bright—
Sisal Strings ..... .04
No. 2 Clean bright—
Sisal Strings ..... .03
Sisal Jute ..... .02½ " .02¾
Scrap—
No. 1 ..... 3.25 " 3.50
No. 2 ..... 1.75 " 1.80
Wool Tares heavy .. 4.00 " 4.25
No. 1 New Light Burlap ..... 3.00 " 4.00
New Burlap Cuttings 3.75 " 4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut ..... 3.37½" —
No. 1 Hard White Shavings, unruled.. 2.87½" —
Soft White Shavings, one cut ..... 2.50 " —
White Blank News .. 1.65 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Groundwood Fly Leaf Shavings .90 " —
Mixed Colored Shavings ..... .75 " —
New Manila Envelope Cuts, one cut ..... 2.87½" —
Hard White Envelope Cuts, one cut ..... 3.37½" —
Triple Sorted No. 1 Brown Soft Kraft. 2.50 " —
Mixed Kraft Env. & Bag Cuttings ..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
No. 1 Heavy Books & Magazines ..... 1.92½" —
New Manila Envelope Cuts, one cut ..... 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
White and Colored Tabulating Cards .. 2.25 " —
Ground Wood Tabulating Cards ..... 1.35 " —
White Blank News .. 1.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper ... .95 " —
Overissue News ..... 1.10 " —
Box Board Cuttings. .72½" —
New Corrugated Cuttings, Kraft ..... 2.25 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Jute Corrugated Cuttings ..... 1.07½" —

Bagging

(F. o. b. Boston)

Gunny Bagging—
Foreign .....(nominal)
Domestic ..... — @ 2.50
Sisal Rope No. 1 .... *4.75 " —
Sisal Rope No. 2 .... *4.25 " —
Mixed Rope ..... — " 1.55
Transmission Rope—
Foreign .....(nominal)
Domestic ..... 2.75 " 3.00
Manila Rope—
Foreign .....(nominal)
Domestic ..... 5.75 " —
Soft Jute Rope ..... 5.25 " —
Jute Car Threads. 3.00 " 3.50
Bleachery Burlap .... 8.50 " 9.00
Scrap Burlap—
Foreign .....(nominal)
Domestic ..... — " 2.75
South American ... — " 3.00

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled. 2.87½ @ —
No. 1 Hard White Shavings, ruled ... 2.50 " —
Soft White Shavings, Misc. ..... 2.15 " —
No. 1 Fly Leaf Shavings ..... 1.67½" —
No. 2 Fly Leaf Shavings ..... 1.12½" —
No. 1 Groundwood Fly Leaf Shavings 1.25 " —
No. 2 Groundwood Fly Leaf Shavings .90 " —
Mixed Colored Shavings ..... .75 " —
New Manila Envelope Cuts, one cut ..... 2.87½" —
Hard White Envelope Cuts, one cut ..... 3.37½" —
Triple Sorted No. 1 Brown Soft Kraft. 2.50 " —
Mixed Kraft Env. & Bag Cuttings ..... 2.75 " —
Kraft Envelope Cuttings ..... 3.25 " —
No. 1 Heavy Books & Magazines ..... 1.92½" —
New Manila Envelope Cuts, one cut ..... 2.87½" —
New Manila Envelope Cuttings ..... 2.65 " —
White and Colored Tabulating Cards .. 2.25 " —
Ground Wood Tabulating Cards ..... 1.35 " —
White Blank News .. 1.65 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
No. 1 Mixed Paper ... .95 " —
Overissue News ..... 1.10 " —
Box Board Cuttings. .72½" —
New Corrugated Cuttings, Kraft ..... 2.25 " —
Old 100% Kraft Corrugated Containers 1.75 " —
Old Corrugated Containers ..... 1.40 " —
Jute Corrugated Cuttings ..... 1.07½" —

Bagging

(F. o. b. Boston)

Gunny Bagging—
Foreign .....(nominal)
Domestic ..... — @ 2.50
Sisal Rope No. 1 .... *4.75 " —
Sisal Rope No. 2 .... *4.25 " —
Mixed Rope ..... — " 1.55
Transmission Rope—
Foreign .....(nominal)
Domestic ..... 2.75 " 3.00
Manila Rope—
Foreign .....(nominal)
Domestic ..... 5.75 " —
Soft Jute Rope ..... 5.25 " —
Jute Car Threads. 3.00 " 3.50
Bleachery Burlap .... 8.50 " 9.00
Scrap Burlap—
Foreign .....(nominal)
Domestic ..... — " 2.75
South American ... — " 3.00
Wool Tares—
Foreign .....(nominal)
Domestic ..... 4.25 "
Aust. Wool Pouches .. — " 3.50
New Zealand Wool Pouches ..... — " 3.50
New Burlap Cuttings 4.75 " 5.00
Heavy Baling Bagging 4.00 " 4.25
Paper Mill Bagging .. 2.50 " 3.00
No. 2 Roofing Bagging 1.35 " —
* OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—
New Light Prints. .04½ @ .04¾
Fancy Percales .... .04¼ " .04
New White No 1. .06¾ " .07
New Light Flannelettes ..... .05½" .06
Canton Flannels, Bleached ..... .06 " .06½
Underwear Cutters, Bleached ..... .06¼" .06½
Underwear Cutters, Unbleached ..... .05¾" .06
Silesias No. 1 ..... .06 " .06½
New Black Silesias .. .03 " .03½
Red Cotton Cuttings .03½" .04
Soft Unbleached .... .06½" .06½
Blue Cheviots .... .05½" .06
Fancy ..... .02¼" —
Washable ..... .02¼" —
Khaki Cuttings .... .02¼" .03
O. D. Khaki ..... .03½" .03½
Corduroy ..... .03¼" .03¼
New Canvas ..... .06½" .06½
B. V. D. Cuttings ... .06¼" .06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—
Repacked ..... 3.80 @ —*
Miscellaneous .... 3.20 " —*
White No. 2—
Miscellaneous .... 2.65 " —*
Twos and Blues, Repacked ..... 2.20 " —*
Old Blue Overalls ... 2.25 " 2.30
Thirds and Blues, Repacked ..... 2.20 " —*
Miscellaneous ..... 1.80 " —*
Black Stockings .... 3.50 " 4.00
Roofing Stock—
No. 1 ..... 1.55 " —*
No. 2 ..... 1.45 " —*
No. 3 ..... 1.35 " —*
No. 4 ..... 1.35 " —*
No. 5, Quality A .. 1.35 " —*
Quality B .. 1.20 " —*
Quality C .. .95 " —*
* Old Manila Rope .. 5.75 " —
* OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas .....(nominal)
Dark Cottons .....(nominal)
Dutch Blues .....(nominal)
New Checks and Blues ..(nominal)
Old Fustians .....(nominal)
Old Linsey Garments ....(nominal)
New Silesias .....(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—
No. 1 Hard White Envelope Cuts, one cut ..... 3.37½" —
No. 1 Hard White Shavings, unruled. 2.87½" —
No. 1 Soft White Shavings ..... 2.50 " —
No. 1 White Ledger .. 2.30 " —
No. 1 Heavy Books & Magazines ..... 1.92½" —
White Blank News .. 1.65 " —
Mixed Kraft Env. & Bag Cuttings ... 2.75 " —
No. 1 Assorted Old Kraft ..... 1.75 " —
Overissue News ..... 1.10 " —
No. 1 News ..... 1.00 " —
No. 1 Mixed Paper ... .95 " —
No. 1 Roofing Rags. 1.55 " —
No. 1 Roofing Bags. 1.45 " —